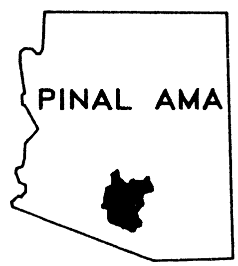
ARIZONA DEPARTMENT OF WATER RESOURCES

PINAL ACTIVE MANAGEMENT AREA
REGIONAL GROUNDWATER FLOW MODEL
PHASE TWO: NUMERICAL MODEL, CALIBRATION, SENSITIVITY AND RECOMMENDATIONS



BY

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HYDROLOGY DIVISION

MODELING REPORT NO. 2

ARIZONA DEPARTMENT OF WATER RESOURCES

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PINAL AMA REGIONAL GROUNDWATER FLOW MODEL

PHASE TWO

NUMERICAL MODEL, CALIBRATION, SENSITIVITY AND PHASE TWO RECOMMENDATIONS

FINAL REPORT
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ABSTRACT

The Arizona Department of Water Resources has developed a preliminary regional groundwater flow model as part of an on-going modeling process for the Pinal Active Management Area. The model was constructed using the U.S. Geological Survey Modular Three-Dimensional Finite Difference Groundwater Flow Model and simulates steady-state (circa 1900) and transient-state (winter 1984-85 thru winter 1988-89) groundwater flow. The model has 2 layers and accounts for groundwater underflow, groundwater pumpage, and groundwater recharge from agricultural irrigation, canals and the Gila River. The uppermost layer, Layer 1, corresponds to the Upper Alluvial Unit and the lower layer, Layer 2, corresponds to both the Middle Silt and Clay and the Lower Conglomerate Units.

The model was calibrated for both steady-state and transient-state groundwater flow conditions. The model simulates a net decrease in the volume of water in storage at approximately 754,000 acre-feet for the 4-year simulation period.

A sensitivity analysis was conducted to determine how sensitive the model solution is to uncertainity in each input variable. The model is most sensitive to vertical conductance between layers, specific yield, storativity and recharge.

The model provides a cumulative source of hydrologic and geologic data for the Pinal AMA. The model maybe useful as a regional understanding of the interrelationships between the groundwater flow system and groundwater pumpage and recharge. However, data limitations and uncertainities prohibit this model for being used as a site-specific planning or permitting tool.

ACKNOWLEDGEMENTS

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PINAL AMA REGIONAL GROUND WATER FLOW MODEL
PHASE TWO

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CHAPTER I

INTRODUCTION

The Arizona Department of Water Resources (ADWR) has developed a preliminary regional groundwater flow model as part of an on-going modeling process for the Pinal Active Management Area (AMA). This modeling effort was divided into two phases. Phase One consisted of data collection and analysis necessary to develop a hydrogeologic conceptual model and preliminary water budget for the Pinal AMA. The Phase One results are discussed in the Pinal AMA Regional Groundwater Flow Model - Phase One Final Report (Wickham and Corkhill, 1989). Phase Two, as discussed in this report, consisted of the actual model development. This report discusses the model development and data input, model usefulness and limitations, including suggestions for future model updates.

OBJECTIVE, SCOPE, AND GOALS

The general objective of the on-going Pinal AMA groundwater modeling effort is to eventually provide a sound technical management tool to use for predicting the impacts of future groundwater management and water conservation scenarios on the regional groundwater system. However, the objective of the Phase Two effort was more limited. The objective of Phase Two was to develop a preliminary groundwater flow model and identify areas of data uncertainty that need to be addressed in future model updates. To achieve this, a set of intermediate goals was established. These goals are:

1) Develop a three-dimensional computer model which reasonably simulates groundwater flow within the modeled portion of the Pinal AMA.

2) Evaluate the model results and output.

3) Test and analyze the model sensitivity to various input variables. This will identify uncertainties in the original data development that will need to be addressed in future data collection and model updates.

4) Outline the model usefulness and limitations.

5) Propose improvements for future of model updates.

MODEL AREA

The Pinal AMA is approximately 4,000 square miles in size and includes five hydrologic sub-basins: Maricopa-Stanfield, Eloy, Vekol Valley, Santa Rosa Valley, and Aguirre Valley. The modeled area is approximately 1,100 square miles in size and is located primarily in the Maricopa-Stanfield and Eloy sub-basins (Figure 1). The modeled area was selected to encompass the areas within the Pinal AMA which currently have or will have the highest urban and agricultural development, and greatest water use.

CHAPTER II

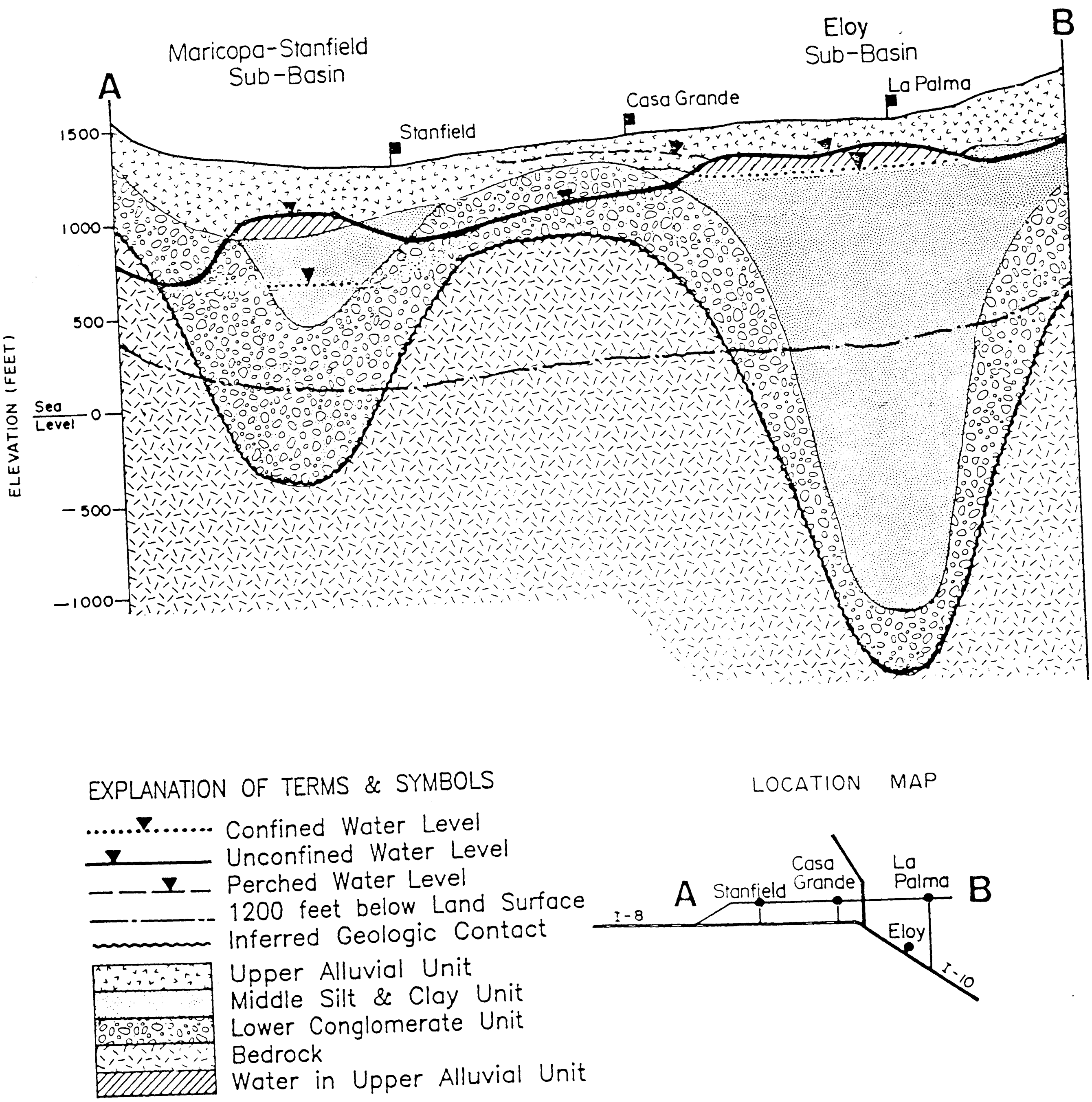
CONCEPTUAL MODEL

General Hydrogeologic Framework

The general framework of the hydrogeologic conceptual model for the modeled portion of the Pinal AMA was presented in the Phase One Report (Wickham and Corkhill, 1989). Three significant hydrogeologic units were identified within the modeled area of the Pinal AMA. These units include the Upper Alluvial Unit (UAU), the Middle Silt and Clay Unit (MSCU), and the Lower Conglomerate Unit (LCU). These units comprise the important aquifers within the modeled area and are described in detail in the Phase One Report. The regional aquifer system is characterized by downward vertical head gradients and delayed drainage from the upper alluvial unit to the lower conglomerate unit. Compaction of the fine-grained confining units is an important source of water (Pool, 1988). Figure 2 is a generalized hydrogeologic section which illustrates the approximate extent of these units.

In general, the UAU consists mainly of unconsolidated to slightly consolidated interbedded sands and gravels and is exposed at land surface throughout the entire model area. The UAU comprises an unconfined aquifer, however, confined aquifer conditions have been observed in some areas of the Eloy sub-basin (Pool, 1988). The thickness of the UAU ranges from less than 50 feet to over 1,200 feet at the Eloy sub-basin center. The MSCU consists of fine-grained sediments, predominantly silt, clay and sand. The MSCU comprises a confined aquifer and regionally is less productive than the UAU. The MSCU varies in thickness from less than 50 feet to over 1,600 feet in the Maricopa-Stanfield sub-basin and greater than 6,500 feet thick in the Eloy sub-basin. The LCU is

FIGURE 2



A
B
Maricopa-Stanfield
Sub-Basin
Eloy
Sub-Basin
Stanfield
Casa Grande
La Palma
1500
1000
500
Sea Level 0
-500
-1000
ELEVATION (FEET)
EXPLANATION OF TERMS & SYMBOLS
Confined Water Level
Unconfined Water Level
Perched Water Level
1200 feet below Land Surface
Inferred Geologic Contact
Upper Alluvial Unit
Middle Silt & Clay Unit
Lower Conglomerate Unit
Bedrock
Water in Upper Alluvial Unit
LOCATION MAP
A
Stanfield
Casa Grande
La Palma
B
I-8
Eloy
I-10

the deepest of the alluvial units and is characterized by semi-consolidated to consolidated coarse-grained sediments. The thickness of the LCU ranges from less than 50 feet to over 1,560 feet, with the maximum thickness unknown. Where the LCU aquifer is in direct contact with the UAU, it is generally unconfined. Where the MSCU is present the LCU is generally confined to semi-confined (Wickham and Corkhill, 1989).

Historical Changes in the Groundwater System

The groundwater flow system within the Pinal AMA has changed significantly since the pre-development era. Anderson (1968) states that prior to 1923, the hydrologic system in Central Arizona was considered to be in equilibrium. The hydrologic system today is not in equilibrium, with outflow exceeding inflow. This imbalance is the result of groundwater pumpage which has created a net decrease in the amount of groundwater in storage and permanently changed aquifer characteristics. Land subsidence and aquifer compaction due to groundwater withdrawals have occurred over hundreds of square-miles throughout the Eloy and Maricopa-Stanfield sub-basins. This subsidence has permanently reduced the storage capacity of the aquifer while providing an important source of water (Pool, 1988).

Figure 3 presents the regional water-level changes within the modeled area from circa 1900 to 1985. Water-level declines of over 500 feet have occurred in the Maricopa-Stanfield sub-basin and over 400 feet have occurred in the Eloy sub-basin. The historical water-level change within the Pinal AMA reflects a maximum annual average decline of 5-6 feet per year.

Water Budget

The Phase One Report presented a detailed analysis of the various components of the conceptual water budget. The components include groundwater underflow, groundwater pumpage, and groundwater recharge. A conceptual water budget of the modeled groundwater system for 1985-1988 is presented in Tables 1 and 2. A brief discussion of each component is presented below. A more detailed interpretation of the conceptual model and water budget components is contained in the Phase One Report (Wickham and Corkhill, 1989).

Underflow

Groundwater underflow into and out of the modeled portion of the Pinal AMA exists at certain locations along the basin margins. These inflows and outflows were identified and quantified using both water-level information and sub-surface geologic maps. The total flux of each was initially quantified using flow-net analysis. Figure 4 shows the areal location and total estimated flux of each underflow. The individual underflows are locally significant, however, their sum represents only a small component of the total water budget for the modeled area. Table 3 presents the revised estimates of groundwater underflow between 1985 and 1988. These estimations were revised from the original values presented in the Phase One Report and are an average between the flow-net estimates and the final calibrated model results.

Ground Water Pumpage

Groundwater pumpage within the modeled portion of the Pinal AMA is primarily for agricultural irrigation. Pumpage by individual groundwater users was summarized and analyzed as a major component of the conceptual water budget. Tables 1 and 2 presents the annual total volume of groundwater pumped between 1985 and 1988.

TABLE 1

CONCEPTUAL WATER BUDGET*
ELOY SUB-BASIN MODEL AREA
PINAL AMA
(ACRE-FEET)

I. INFLOWS

	1985	1986	1987	1988	4-Year TOTALS
A. Groundwater Underflow	31,900	31,900	31,900	31,900	127,600**
B. Groundwater Recharge					
1. Ag. Irrigation	157,800	134,200	182,800	146,400	
2. SCIP	125,700	148,100	121,400	142,500	
3. Gila River	70,700	11,000	300	4,500	
	354,200	293,300	304,500	293,400	1,245,400
TOTAL INFLOW					1,373,000

II. OUTFLOW

	1985	1986	1987	1988	4-Year TOTALS
A. Groundwater Underflow	10,800	10,800	10,800	10,800	43,200**
B. Pumpage					
1. ROGR	349,000	309,300	351,500	369,000	
2. SCIP	31,800	45,900	34,900	43,200	
	380,800	355,200	386,400	412,200	1,534,600
TOTAL OUTFLOW					1,577,800

III. CHANGE IN STORAGE

TOTAL INFLOW	1,373,000
TOTAL OUTFLOW	1,577,800
TOTAL INFLOW MINUS OUTFLOW	-204,800

Note:
ROGR = ADWR Registry of Groundwater Rights
SCIP = San Carlos Irrigation Project

* Values presented are for a composite groundwater system
** Revised underflow estimates

TABLE 2

CONCEPTUAL WATER BUDGET*
MARICOPA-STANFIELD SUB-BASIN MODEL AREA
PINAL AMA
(ACRE-FEET)

I. INFLOWS

	1985	1986	1987	1988	4-Year TOTALS
A. Groundwater Underflow	24,600	24,600	24,600	24,600	98,400**
B. Groundwater Recharge					
1. Ag. Irrigation	84,200	61,900	83,200	86,800	316,100
	108,800	86,500	107,800	111,400	
TOTAL INFLOW					414,500

II. OUTFLOW

A. Pumpage

	1985	1986	1987	1988	4-Year TOTALS
1. ROGR	210,000	155,600	162,300	127,300	
2. AK CHIN	29,900	29,900	29,900	29,900	
	239,900	185,500	192,200	157,200	774,800
TOTAL INFLOW					774,800

III. CHANGE IN STORAGE

TOTAL INFLOW	414,500
TOTAL OUTFLOW	774,800
TOTAL INFLOW MINUS OUTFLOW	-360,300

Note:
ROGR = Registry of Groundwater Rights
AK CHIN = AK CHIN Farms

* Values present are for a composite groundwater system
** Revised underflow estimates

TABLE 3

REVISED ESTIMATES FOR UNDERFLOW WITHIN THE PINAL AMA MODEL

Eloy Sub-basin

I. Florence Outflow:

Phase One Estimate* = 4,300 AF/Year
Model Estimate = 2,300 AF/Year
Revised Phase Two Estimate = 3,300 AF/Year or 13,200 AF/4 Years

II. Sacaton-Santan Outflow **

Phase One Estimate* = 3,700 AF/Year
Model Estimate = 11,300 AF/Year
Revised Phase Two Estimate = 7,500 AF/Year or 29,800 AF/4 Years

TOTAL OUTFLOW 43,200 AF/4 Years

III. South Pichacho Peak Inflow

Phase One Estimate* = 35,300 AF/Year
Model Estimate = 22,700 AF/Year
Revised Phase Two Estimate = 29,000 AF/Year or 116,000 AF/4 Years

IV. Aguirre Inflow

Phase One Estimate* = 4,100 AF/Year
Model Estimate = 1,600 AF/Year
Revised Phase Two Estimate = 2,900 AF/Year or 11,400 AF/4 Years

TOTAL INFLOW 127,600 AF/4 Years

Maricopa-Stanfield Sub-basin

V. North Maricopa-Stanfield Inflow

Phase One Estimate* = 32,000 AF/Year
Model Estimate = 17,100 AF/Year
Revised Phase Two Estimate = 24,600 AF/Year

TOTAL INFLOW 98,400 AF/4 Years

Note:

* Phase One estimates were calculated using Flow-net analysis

** After re-evaluation of water levels and geology of the area, the flow-net calculations were revised. Reduced streamtubes from 4 to 3.

Groundwater Recharge

Three major components of groundwater recharge were identified within the model area. These components include recharge from agricultural irrigation, (including Ak Chin Farms), the San Carlos Irrigation Project (SCIP) canals and reservoir, and the Gila River. These three components of recharge represent the largest inflow into the groundwater system. Tables 1 and 2 present the estimated annual recharge for each sub-basin. For a more detailed discussion on estimating pumpage and recharge within the model, refer to the Phase One Report (Wickham and Corkhill, 1989).

CHAPTER III

NUMERICAL MODEL

The regional numerical model of the groundwater flow system within the Pinal AMA simulates steady-state (circa 1900) and transient-state (1985-1988) groundwater flow conditions. The model is quasi-three dimensional, two layers, and accounts for groundwater underflow into and out of the model, groundwater recharge from agricultural irrigation, canals and the Gila River, and groundwater pumpage. A detailed description of the model development is discussed below.

Selection of the Model Code

The model code selected to simulate groundwater flow in the Pinal AMA was the Modular Three-Dimensional Finite Difference Groundwater Flow Model (MODFLOW) developed by the U.S. Geological Survey (McDonald and Harbaugh, 1988). Several factors influenced the selection of this model code. The factors included: 1) the modular format of MODFLOW facilitates independent examination of specific hydrologic features, 2) the code is flexible and can accomodate hydraulic interconnection between multiple hydrogeologic units, 3) documentation is relatively complete and comprehensive, and 4) the model has been widely used throughout the hydrologic professional community and is generally accepted as a valid model to simulate groundwater flow. A detailed explanation of the mathematical theory, optional packages and solution techniques are provided in the MODFLOW documentation. Refer to McDonald and Harbaugh (1988) for a complete model description.

Model Simulation Period

The model simulates steady-state groundwater flow circa 1900 (ie, pre-development). Steady-state runs were conducted to refine the areal distribution of hydraulic conductivity. The model also simulates transient groundwater flow between 1985 and 1988. This time period was selected because water-level and pumpage data were available in sufficient areal distribution throughout the AMA.

General Model Characteristics

The model was constructed using five packages offered by MODFLOW. These packages are: Basic, Block Center Flow (BCF), Well, Recharge, and Strongly Implicit Procedure (SIP). A brief description of each MODFLOW package and how they relate to modeling the hydrogeologic system is presented. The Basic package establishes the starting water levels and discretization of time. The BCF package creates the hydrogeologic framework of the model. This package computes the conductance components and rate of movement of water between adjacent model cells and to and from storage. The Recharge package simulates the areal distribution from all types of recharge (e.g. agricultural irrigation, SCIP canals, and the Gila River). The SIP package is used to solve the large system of simultaneous linear groundwater flow equations. Refer to McDonald and Harbaugh (1988) for a complete description of each package.

The model was created using five time-steps per stress period with each stress period coinciding with one calendar year. There are four stress periods simulated. The model units for length are feet and for time are seconds. Table 4 presents the general characteristics of the model.

TABLE 4

GENERAL CHARACTERISTICS OF THE PINAL AMA MODEL

MODEL CHARACTERISTICS	DESCRIPTION	MODEL UNIT
Steady-State	Circa 1900, Pre-development	Time = Seconds
Transient	1985-1988	Time = Seconds
Model Grid	39 Rows x 47 Columns	Length = Feet
Model Layers -Layer One -Layer Two	2 Layers of Variable Thickness Unconfined Aquifer Confined/Unconfined Aquifer	Length = Feet
Vertical Hydraulic Interconnection	Provided Using VCONT	1/Seconds
Recharge	Applied to Uppermost Active Cell	Feet/Second
Pumpage	Derived for both Model Layers	$Feet^3$/Second
Model Cells	No-Flow, Constant and Variable Head	
Solution Technique	Strongly-Implicit Procedure	

Model Grid

The model area was divided into an orthogonal grid consisting of 39 rows and 47 columns. Each model cell is approximately one square-mile and roughly corresponds with the Township-Range-Section grid (Figure 5). Since the model grid approximates the Township-Range-Section grid, each model cell may be referenced by a corresponding cadastral location. Appendix 1 relates each model cell with a cadastral location.

Model Layers and Aquifer Types

Two layers are utilized in the model to represent three hydrogeologic units. The uppermost layer, Layer One, corresponds with the Upper Alluvial Unit (UAU). The UAU is modeled as an unconfined aquifer. MODFLOW calculates the saturated thickness by subtracting the bottom of the layer from the water-level elevation.

The lower layer, Layer Two, corresponds with the Middle Silt and Clay Unit (MSCU) and the Lower Conglomerate Unit (LCU). Although the MSCU laterally pinches out toward the basin margin, both hydrogeologic units were combined into one model layer since MODFLOW requires a layer to be laterally continuous across the model domain. The MSCU exists only in the middle of the sub-basins and could not be modeled as a separate hydrogeologic unit. Layer Two is modeled as a convertible aquifer layer that can switch from a confined to an unconfined aquifer. This implies that when the potentiometric surface drops below the top of Layer Two, the model layer converts from a confined aquifer to an unconfined aquifer. The actual thickness of the MSCU and LCU are not represented in the model. The bottom of Layer Two corresponds to the geologic contact of the valley fill with the hard rock basement complex near the basin margins. However, towards the center of the sub-basins where the valley fill is very thick, the bottom of Layer Two parallels the surface elevation with a maximum thickness of 4,000 feet. This maximum thickness was arbitrarily selected since there are no pumping wells in the region that penetrate deeper than 4000 feet.

The thickness of each model layer was defined by the elevation of each geologic contact. These elevations were derived by discretizing the geologic contour maps developed in the Phase One Report (Wickham and Corkhill, 1989). The geologic contour maps were developed using over 2,000 driller's logs and geophysical logs where available and adopting previous work. The previous geologic work conducted in the region included Hardt and Cattney (1965), Oppenheimer and Sumner (1980), and U.S. Bureau of Reclamation (1976). The data arrays for the top and bottom of each model layer are in Appendix 2.

Vertical Leakance

Vertical leakance between Layers One and Two was modeled using the VCONT option. MODFLOW requires VCONT to be calculated as input to the model and then input as an array. The equation used to calculate VCONT is:

$$VCONT_{1-2} = \frac{1}{\dfrac{(V_1)/2}{K_{v1}} + \dfrac{(V_2)/2}{K_{v2}}}$$

Where:
$VCONT_{1-2}$: vertical conductance between Layers One and Two
V_1: saturated thickness of model Layer One (feet)
V_2: saturated thickness of model Layer Two (feet)
K_{v1}: vertical hydraulic conductivity of Layer One (feet/sec)
K_{v2}: vertical hydraulic conductivity of Layer Two (feet/sec)
Units: 1/second

The final ratio of horizontal hydraulic conductivity in Layer 1 to vertical hydraulic conductivity between Layers 1 and 2 was 10,000 to 1. The distribution of VCONT is presented in Appendix 3.

Boundary Conditions

The selection of proper model boundary cell types is essential to the accuracy of the model. Boundary cells define the hydrologic conditions along the model borders. There are two fundamental types of model cells: inactive and active. Inactive model cells (i.e., no-flow cells) are those for which no groundwater flow into or out of the cell is permitted. No-flow cells in the model correspond to either bedrock outcrops or areas where groundwater flow is parallel to impermeable boundaries. There are two types of active cells used in the model: variable head and constant head. Variable head model cells allow the water-level elevation in the cell to fluctuate with time. These cells comprise the active simulated region within the model. Constant head model cells are those for which the water-level elevation in the cell is held constant at a specified elevation. Constant head cells keep the water-level elevation constant, but allow the flux into or out of the cell to change in response to changing hydraulic conditions. Constant head cells are located in both layers of the model where groundwater underflow occurs. Figure 6 presents the location and types of model cells used in the Pinal AMA model.

Basic Data Requirements

The Phase One Report summarizes the available hydrogeologic data within the Pinal AMA (Wickham and Corkhill, 1989). These data were assembled, analyzed and discretized for use in the model. The hydrologic and geologic data input for the model is summarized in Table 5.

TABLE 5

SUMMARY OF HYDROLOGIC AND GEOLOGIC DATA INPUT

Input Date	Simulation Steady-State	Simulation Transient	Description	Data Source (See Notes)
Water Levels	X		Pre-Development	Thomsen & Baldys (1985)
Water Levels		X	Winter 1984-85 Winter 1988-89	ADWR-GWSI
Pumpage		X	1985-1988 Ag	ADWR-ROGR Reports
Pumpage		X	1985-1988 Indian	Ak-Chin Farms
Pumpage		X	1985-1988 SCIP	SCIP Annual Reports
Recharge	X		Pre-Development	Thomsen (1988)
Recharge		X	1985-1988 Ag	ROGR and IGFR Reports
Recharge		X	1985-1988 SCIP	SCIP Annual Report
Recharge		X	1985-1988 Gila R.	SCIP Annual Report and USGS Gage Data
Aquifer Parameters	X	X	Hydraulic Conductivity	ADWR-DLP
			Specific Yield and Storage Coefficient	Estimated
Hydrogeologic Contacts	X	X	Top and Bottom of Model Layers	ADWR-Driller's Logs and Geophysical Logs

Notes:

ADWR = Arizona Department of Water Resources
GWSI = Groundwater Site Inventory
ROGR = Registry of Grandwater Rights
IGFR = Irrigation Grandfathered Rights
SCIP = San Carlos Irrigation Project
DLP = Driller's Log Program
Ag = Agriculture

An example of the discretization method is described below: A geologic elevation contour map of the contact between the UAU and MSCU was created from available well log information. The model grid was then superimposed on the contour map and an elevation for the contact was assigned to each model cell. For model cells located between contour lines, the elevation for each cell was interpolated based upon their distance from each contour.

Water Levels

Water-level data for steady-state simulations were derived from a water-level elevation map developed by Thomsen and Baldys (1985) for circa 1900. This map was assumed to be representative of pre-development era water levels. Figure 7 presents the starting water levels for each model cell. The same water-level elevation was assigned to both model layers since it was assumed that there was little vertical hydraulic gradient during the pre-development era.

Starting and ending water-level data were required for transient model simulations. Separate water-level elevation maps for each hydrogeologic unit for winter 1984-85 (starting heads) and winter 1988-89 (ending heads) were created for the Phase One Report (Wickham and Corkhill, 1989). Figures 8 and 9 present the starting measured water levels for each model layer. Figures 10 and 11 present the ending measured water levels for each model layer. Refer to Appendix 4 for the water level arrays for both transient and steady-state simulations.

Pumpage

Groundwater pumpage from both model layers was simulated for transient-state runs. The annual pumpage for each model cell was summarized into a single volumetric pumpage rate (ft^3/sec). Groundwater pumpage was not simulated during steady-state modeling. There was little to no groundwater pumpage within the AMA circa 1900 (Thomsen and Baldys, 1985).

Groundwater pumpage was a significant portion of the overall water budget for transient simulations. Pumpage data including areal distribution and volume of water were obtained from ADWR Registry of Grandfather Rights (ROGR), San Carlos Irrigation Project (SCIP) annual reports, and the Ak-Chin Indian community. However, the primary source of pumpage data was from ROGR. The Ak-Chin Indians supplied the Department with an estimate of their annual pumpage at Ak-Chin Farms which was assumed constant throughout the model simulation period. Figure 12 presents the total pumpage for the entire simulation period per model cell. Refer to Appendix 5 for the total annual pumpage attributed to each model cell and corresponding cadastral location.

The vertical distribution of pumpage to each model layer was accomplished utilizing ADWR's Groundwater Site Inventory (GWSI) well-construction database. The automated process compared the construction of each well within each model cell and derived a percent of perforated opening per hydrogeologic unit (i.e., model layer). Each model cell was then assigned an average percent of screened opening per hydrogeologic unit. The total pumpage within each layer for each model cell was calculated using the following relationship:

COLUMN

ROW

	1									10										20										30										40							47
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	7564	6661	2823	2596	3041	6081	3041	6516	2606	4995	5792	796	0	0	0	0	0	0	0	0	0	0	0	145	0	0	1014	0	0	0	0	0	0	0	0	0	0	0	0	3620	652	0	0	0	941
	0	0	10353	3041	507	3547	7240	13031	6371	9556	8543	7095	4416	0	0	0	0	0	0	0	0	0	0	0	0	0	1158	869	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1810
	0	0	6009	869	0	4923	3258	5792	6661	7602	7023	8760	2823	9846	1882	72	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1158	0	0	0	0	0	0	0	0	1376	2968	11004	5575	2244	2461	11077
	0	0	4416	2100	0	941	7167	5647	4489	7023	7891	9701	10208	8108	434	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	724	652	2679	0	0	0	0	217	1738	4489	6226	2244	724	2172	12018	6588
	0	0	2534	869	0	0	1593	7746	3403	4127	4851	3403	5864	3547	217	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	724	145	507	2172	0	1810	1448	1014	3041	5647	3620	1303	5068	0
	0	0	3403	0	0	0	7529	2606	2172	4633	4561	2100	2244	2534	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1882	5792	0	145	2606	1520	1448	869	652	2606	3909	16651	0	0
	0	0	1810	3765	652	1086	4706	869	2606	6226	4127	3113	1810	1448	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3258	0	0	7674	3620	4489	72	869	1014	1520	2823	434	507	362	5213	0	0
10	0	217	0	579	4995	7674	4995	9194	0	2317	0	11294	0	0	145	0	0	0	0	0	0	0	0	0	0	0	0	0	0	72	0	3113	3909	6516	4851	3547	7457	724	5937	724	4489	2389	145	8108	3692	0	0
	0	0	0	2679	3837	4344	6443	11366	0	145	2606	13900	4344	9774	72	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9122	7674	6081	9267	6154	3909	1303	2100	6154	0	0	7384	15348	6299	0	0
	0	0	0	7964	5575	5575	4054	20633	362	7819	0	4561	4923	11801	362	0	0	0	0	0	0	0	0	0	0	2172	217	0	0	0	3258	6878	7529	5140	4923	4706	6443	2461	941	4127	724	3909	5792	0	0	0	0
	0	0	0	1376	10063	217	434	0	796	72	217	0	0	0	3330	0	579	0	0	0	0	0	0	0	0	0	0	1520	145	0	941	8760	1448	3837	6805	6516	4054	5719	4923	3113	8398	7023	1086	362	0	0	0
	0	0	0	579	579	3692	3982	0	0	0	2534	0	0	0	0	724	0	0	0	0	0	0	0	0	2027	1376	0	0	0	0	652	3637	652	1882	6299	5864	4416	7167	5285	5430	6226	3547	0	869	0	0	0
	0	0	0	2534	2461	2968	4776	2823	724	2751	2172	3547	1810	2606	1955	7240	0	0	0	0	0	145	72	2461	1520	4416	5502	941	1738	5140	4054	0	4706	4127	724	4633	0	3982	2461	4923	0	1303	0	0	0	0	0
	0	0	0	869	869	4923	6588	2100	4489	0	4271	4199	145	5068	4561	2461	4851	0	0	0	0	0	0	0	0	11439	12163	6950	3113	6154	1738	4271	9412	4054	23312	7529	4344	5864	290	869	0	4851	0	0	0	0	0
	0	0	0	0	0	1231	145	362	3403	9991	5937	4706	6516	2896	1882	0	72	1955	290	0	2751	217	0	0	507	3692	6588	12090	9846	10063	4344	8760	10136	1014	2823	362	724	4127	2968	1882	1158	290	0	0	0	0	0
	0	0	0	0	0	0	0	72	941	3982	3185	2317	3330	3692	2244	434	72	1014	0	0	5068	0	0	579	145	362	0	4489	2027	3475	0	1955	0	0	0	2027	2679	1665	5719	0	7746	0	0	0	0	0	0
	0	0	0	0	0	0	0	72	1014	4561	2461	7167	1086	2389	3620	1231	0	6371	0	0	145	1665	0	0	0	0	1158	6371	3475	0	1520	8688	12887	13683	579	0	4344	6081	2172	941	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	1738	796	2100	4344	1231	1303	0	0	0	0	0	0	1520	0	0	0	0	2027	1014	4633	0	0	0	1810	3041	290	3837	2389	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	1086	145	579	1593	579	941	0	0	0	0	0	0	0	0	0	0	0	1882	0	0	0	0	0	941	0	217	0	2317	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	1955	724	1158	3113	869	941	724	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1593	796	5647	0	1158	724	507	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3692	869	869	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1593	652	4489	0	869	1014	1086	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	72	72	0	0	0	0	0	0	0	3547	0	0	0	0	0	0	0	0	0	362	2968	0	2172	434	1448	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2534	15421	19185	5213	8977	4561	0	0	217	72	2968	2679	7240	3765	4344	1520	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4561	72	290	362	0	0	0	0	217	4923	0	8181	0	0	7095	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1810	10787	7384	1665	0	0	0	0	2679	0	652	4633	6805	2606	5647	9412	13249	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1086	652	1014	0	0	217	217	0	0	2679	3547	652	3475	4706	10353	4995	6081	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	579	0	0	72	1520	1303	1738	5430	796	4416	10860	1231	0	5647	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9846	0	0	434	217	507	4127	2389	869	5140	1882	15203	0	2317	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7891	0	0	217	434	0	3765	2027	1520	2679	6154	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	652	0	0	0	290	2896	6081	4054	2896	3113	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	796	6516	145	362	4995	6154	6950	8326	11946	8760	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1593	4561	10425	4054	1158	3185	5068	10932	7023	434	3765	2461	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2679	5430	2823	6226	14552	11873	652	2461	8108	7674	72	1593	5430	12018	1738	0	217	434	796	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3041	10715	4416	0	0	217	4851	6805	652	3403	290	0	1665	9122	5502	72	2172	2823	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	362	4127	5792	0	0	0	0	0	0	0	0	0	0	652	0	0	3837	6950	145	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1231	7095	5285	0
39	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	652	0

FIGURE 12
AREAL DISRIBUTION OF PUMPAGE
1985–1988
ACRE–FEET/4YEARS

$$\text{L1 pumpage per cell} = \text{Total Pumpage per cell} * \left\{ \frac{\text{\% perforated L1*Sy}}{(\text{\% perforated L1*Sy})+(\text{\% perforated L2 * Sy})} \right\}$$

Where: L1 = Model Layer 1 (UAU)
L2 = Model Layer 2 (MSCU-LCU)
Sy = Specific Yield

The use of specific yield to estimate the rate of flow to a well per model layer is incorrect. Hydraulic conductivity should have been used, however, the relative ratio's of specific yield and hydraulic conductivity were similar between each hydrogeologic unit. Therefore, a reasonable vertical distribution of pumpage was obtained in spite of this error.

Recharge

Recharge from the Gila River, the San Carlos Irrigation Project (SCIP) canals and reservoir, and from agricultural irrigation are simulated in the model. Recharge was attributed to the uppermost saturated layer, generally Layer One. The maximum potential recharge from all components were summarized into a single infiltration rate (feet/sec) for each model cell. The areal distribution and volume of recharge between 1985 and 1988 is presented in Figure 13. Refer to Appendix 6 for the total annual volume of recharge attributed to each model cell and corresponding cadastral location.

Surface water recharge was an important component of the water budget. Both steady-state and transient simulations accounted for recharge. The Gila River was the only source of recharge during steady-state simulations. The Gila River was intermittent in the modeled area circa 1900 (Lee, 1904). River channel infiltration rates and volumes for steady-state conditions within the modeled area were estimated assuming intermittent flow of approximately 30,000

COLUMN

ROW	1									10						
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	413	2606	2374	1092	1058	1458	2337	1790	2548	2724	1643	2347	380	0	0
	0	511	3224	1060	29	1121	1290	3494	1795	3345	3246	2285	1386	862	115	0
	0	0	2372	185	0	1733	1685	2587	2730	2375	2589	3664	2760	2847	364	0
	0	473	1630	125	0	0	1120	2023	2738	2522	2647	2064	2545	2480	338	0
	0	516	1335	91	0	0	0	2599	1927	1515	1469	911	1438	1914	69	0
	0	612	2107	137	0	0	0	665	1180	1453	1036	480	496	939	250	0
	0	4	1121	81	232	450	930	89	2185	932	1097	404	65	545	300	0
10	26	65	18	111	1426	2145	3927	352	2108	1170	758	752	744	757	3	0
	0	193	447	443	1221	2327	2911	255	2104	2339	2272	2255	2227	2862	353	419
	0	4	443	1208	2317	2355	2287	950	3026	3135	2716	3052	3311	4822	2440	0
	0	0	0	1056	2192	1651	1063	1185	1840	1903	1286	534	2480	2130	2542	69
	0	27	0	971	1239	1418	1556	1027	1152	1258	449	1364	1541	794	1475	89
	0	0	0	707	1405	1541	1324	972	1092	1277	1894	1904	1486	1441	1392	1303
	0	0	0	152	306	1548	1291	916	1100	603	1810	1583	1434	1475	1360	1352
	0	0	0	0	4	553	935	100	1102	1140	1548	1746	961	1393	885	314
	0	0	0	0	0	0	0	49	730	1198	1710	1570	960	1428	830	575
	0	0	0	0	0	0	0	22	392	991	830	1993	2485	1539	1776	561
20	0	0	0	0	0	0	0	0	10	40	785	998	1238	1436	2029	1370
	0	0	0	0	0	0	0	0	0	0	19	372	75	843	1384	1094
	0	0	0	0	0	0	0	0	0	0	31	636	180	226	1463	401
	0	0	0	0	0	0	0	0	0	0	0	0	0	28	1541	62
	0	0	0	0	0	0	0	0	0	0	0	0	0	1	41	129
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
39	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

ROW				20										30		
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3186
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1657
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	636	84	0	0	0	811	2678
	195	0	0	0	0	0	0	0	0	33	4	0	0	0	298	2606
	179	0	0	0	0	0	0	0	687	474	50	0	0	281	76	1303
	91	0	0	26	1143	636	401	288	643	392	27	767	837	973	1267	586
	0	0	0	23	2170	1550	3753	3021	92	2595	1586	2004	1812	1936	1046	1971
	0	0	0	12	1897	4565	3444	3455	0	25	978	1993	3236	3152	4096	3974
	523	1129	0	0	1067	1896	4569	4415	3349	3984	4426	2380	4893	5102	5743	5697
	57	2612	0	0	57	488	4965	4817	5108	4989	3866	4872	4775	5285	4700	5374
20	51	102	0	0	0	0	3841	4791	5179	4906	4480	4470	4405	3888	3808	56
	662	0	0	209	156	0	26	19	52	42	62	120	401	265	0	0
	560	37	121	456	176	0	0	0	0	0	0	0	0	0	0	0
	156	0	4	344	3	0	0	0	0	735	803	0	0	0	0	0
	301	0	0	1	0	0	0	0	1925	2762	2255	413	4	7	0	0
	0	0	0	0	0	0	0	0	5	1958	2830	1553	1766	3205	1568	0
	0	0	0	0	0	0	0	0	0	30	2707	20	44	64	69	0
	0	0	0	0	0	0	0	0	0	1741	1645	2492	0	0	0	0
	0	0	0	0	0	0	0	0	0	201	36	189	0	17	111	0
	0	0	0	0	0	0	0	0	0	36	75	76	0	1	65	877
30	0	0	0	0	0	0	0	0	0	12	1554	1711	32	25	643	491
	0	0	0	0	0	0	0	0	0	0	859	1587	3	9	179	569
	0	0	0	0	0	0	0	0	0	0	116	215	0	11	190	208
	0	0	0	0	0	0	0	0	0	0	0	61	851	696	1400	870
	0	0	0	0	0	0	0	0	0	0	0	66	1509	1926	2410	2103
	0	0	0	0	0	0	0	0	0	0	0	386	2091	1340	2767	2601
	0	0	0	0	0	0	0	0	0	0	81	1562	3075	1367	0	0
	0	0	0	0	0	0	0	0	0	0	25	374	1619	1883	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
39	0	0	0	0	0	10	95	0	0	0	0	0	0	0	0	0

ROW								40							47
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	58	581	311	0	0	0	5623
	4748	2939	0	0	0	0	0	0	239	494	148	0	0	5798	20852
	1857	3120	4997	2067	0	0	0	0	1171	1526	1596	2520	6360	9170	15062
	0	0	1857	4710	3219	0	424	2128	2252	2338	4930	7436	7293	6699	9350
	0	416	1857	2584	6959	4064	1090	1791	5059	5818	4307	6246	3655	12795	0
	0	0	2862	3983	3131	2855	5842	5040	924	825	4975	2852	11582	24	0
	0	974	9217	8742	2910	2995	1523	1485	3159	13	5923	6088	9570	0	0
10	2124	2144	2641	2840	7861	7157	8579	8919	4330	3580	4276	15778	112	0	0
	1942	2121	2450	2617	1146	287	3660	4431	4448	4338	3938	10085	46	0	0
	2271	2280	2453	1597	3158	1201	4400	4442	4511	4528	11870	5	0	0	0
	602	1262	3500	2154	1731	1588	5402	5480	6283	5719	8801	64	0	0	0
	285	1246	1522	1410	1399	2064	2423	1803	5701	13427	0	337	0	0	0
	3191	1333	1813	5325	673	2279	1316	1556	5227	12048	0	0	0	0	0
	6395	1473	1540	6394	1073	1295	463	513	4941	8984	0	0	0	0	0
	5846	5812	823	5370	669	1918	5117	1774	3620	8552	0	0	0	0	0
	5663	6469	4963	4960	5847	5205	4965	12071	13381	3585	0	0	0	351	0
	6010	6440	3443	3658	4853	5413	4422	11910	11436	3561	0	0	0	0	0
20	58	65	869	653	983	1316	1609	3598	14997	3561	0	0	0	0	0
	0	557	358	27	905	925	1356	30	0	0	0	0	0	0	0
	0	644	1162	2185	512	938	325	225	0	0	0	0	0	0	0
	0	1043	98	2328	0	945	306	100	0	0	0	0	0	0	0
	0	0	195	1474	21	909	385	658	0	0	0	0	0	0	0
	0	407	0	893	764	2290	1859	1009	1633	0	0	0	0	0	0
	0	10	79	12	1025	1945	1960	57	2340	0	0	0	0	0	0
	198	734	9	244	1665	1610	1346	2142	3330	2974	0	0	0	0	0
	17	147	920	1950	928	2930	481	1570	1602	2284	0	0	0	0	0
	784	595	1851	648	1803	227	1875	297	980	1	0	0	0	0	0
30	892	990	944	1773	1571	1613	1714	0	819	0	0	0	0	0	0
	1161	1194	865	549	967	2130	27	0	0	0	0	0	0	0	0
	1284	888	1332	980	1436	1544	0	0	0	0	0	0	0	0	0
	82	1194	1194	2277	1246	2353	470	0	0	0	0	0	0	0	0
	1784	2040	2263	2688	1505	718	1403	705	0	0	0	0	0	1219	0
	2481	1432	1247	2397	1182	254	593	2816	3240	763	0	0	0	315	0
	163	1689	1683	209	706	155	139	291	1947	1665	2	773	811	0	0
	0	0	0	0	0	0	0	37	240	297	2717	4053	1713	1208	0
	0	0	0	0	0	0	0	0	0	116	847	1393	3443	4793	0
39	0	0	0	0	0	0	0	0	0	0	0	0	73	859	0

FIGURE 13
AREAL DISTRIBUTION OF RECHARGE
1985—1988
ACRE—FEET/4 YEARS

acre-feet/year. These infiltration estimates were similar to the Gila River underflow calculations near Sacaton by the USGS in 1904 (Lee, 1904).

Transient simulations accounted for recharge from the Gila River, SCIP canal and reservoir leakage and agricultural irrigation. The maximum potential recharge from the Gila River was estimated using the water-budget methodology. Dam release flow data was obtained from Ashurst-Hayden Dam and outflow data from the USGS streamflow gage #09479500 near Laveen. Recharge for this 64-mile reach was estimated taking into account any potential additions to flow between the dam and streamflow gage. Recharge from the Gila River was attributed within the model as a weighted function of the lineal length of river reach per model cell.

There are approximately 24 miles of the Gila River within the model area. Table 6 presents the total annual volume of recharge estimated from the Gila River between 1985 and 1988.

Estimates of groundwater recharge were made for the San Carlos Irrigation Project (SCIP) unlined canal system and Picacho Reservoir. Losses along the main canal system and total volume of water delivered to each lateral district are reported within the SCIP annual reports. Lateral losses were estimated using the water budget methodology by subtracting the total volume of water delivered to each lateral district from the total volume of water delivered to the irrigated lands. Lateral losses were distributed within each lateral district in proportion to the total surface area for each lateral per model cell. Picacho Reservoir losses were estimated by subtracting the total inflow from outflow and taking into account evaporation. Table 7 presents the annual total estimated volume of recharge from the SCIP.

TABLE 6

GILA RIVER FLOWS AND CALCULATED LOSSES 1985-1988

PINAL AMA MODEL AREA

CAL. YEAR	INFLOW* (AF/YR)	OUTFLOW USGS GAGE #09479500	ADDITIONS** TO FLOW (AF/YR)	LOSSES*** MODEL AREA (AF/YR)
1985	381,976	191,700	1,171	71,000
1986	29,536	43	975	11,300
1987	794	13	1,029	700
1988	8,189	67	3,913	4,500

* INFLOW VALUES FROM SCIP ANNUAL REPORTS, WATER SPILLED AND SLUICED AT THE ASHURST-HAYDEN DAM.

** ADDITIONS TO FLOW FROM SOURCES DOWNSTREAM OF ASHURST-HAYDEN DAM. SOURCES INCLUDE: GILA STORM DRAIN (SRP) AND 900 AF/YR FROM CITY OF COOLIDGE EFFLUENT DISCHARGE

*** Rounded to Nearest 100 AF/YR

TABLE 7

SAN CARLOS IRRIGATION PROJECT
ESTIMATED CANAL AND RESERVOIR LOSSES
(ACRE-FEET)

YEAR	REPORTED MAIN CANAL LOSSES (1)	ADJUSTED MAIN CANAL LOSSES (2)	ESTIMATED LATERAL CANAL LOSSES	ESTIMATED PICACHO RESERVOIR LOSSES	ESTIMATED MAXIMUM POTENTIAL RECHARGE WITHIN MODEL AREA (3)
1985	36,557	30,270	83,950	11,430	125,700
1986	57,133	47,300	83,730	17,050	148,100
1987	40,209	33,290	73,300	14,800	121,400
1988	53,283	44,120	84,450	13,900	142,500
				TOTAL	537,700

(1) Data from SCIP Annual Irrigation Report (Calender Year)
(2) Adjustment for Percentage of Main Canal in Model Area (17.2%)
(3) Figures Rounded Off to Nearest 100

Recharge from agricultural irrigation was divided into two categories: non-Indian and Indian. The total irrigated acreage, water applied and areal distribution for non-Indian agriculture was obtained from Irrigation Grandfathered Water Rights (IGFR) registration on file at ADWR. An AMA wide representative average consumptive use and irrigation efficiency was used to estimate recharge (Table 8). In general, recharge was estimated by subtracting the consumptive use of the total IGFR irrigated lands from the total water applied. Recharge from Indian lands was estimated for Ak-Chin Farms. Ak-Chin Farms reported to ADWR their estimated annual average irrigated acreage and volume water.

However, due to an oversight in the model construction, the areal distribution of Indian recharge was not taken into account and was never attributed to the Ak-Chin Farms area. Table 8 presents the annual total estimated volume of recharge from agricultural irrigation. The total recharge per model cell for each model simulation year is presented in Appendix 6.

Aquifer Parameters

Hydraulic conductivity, specific yield, and storativity were estimated for each hydrogeologic unit. The ADWR Driller's Log Program (DLP) was used to derive initial estimates of hydraulic conductivity and specific yield (Long and Erb, 1980). The DLP analyzes well driller's logs and derives estimates of aquifer parameters which correspond to specific depth intervals. Representative driller's logs were selected for each Township in the modeled area and the calculated aquifer parameters were assigned to their respective model cell. A storativity of 0.005 was assigned to model cells in Layer Two where the MSCU overlies the LCU. Storativity is defined as the specific storage of the aquifer material multiplied by the aquifer thickness. Appendix 7 presents the distribution of hydraulic conductivity, specific yield, and storativity.

Table 8
AGRICULTURAL RECHARGE VOLUME ESTIMATES 1985-1988
PINAL AMA MODEL AREA
(ACRE-FEET)

	IRRIGATED ACREAGE				APPLIED VOLUMES		MAXIMUM POTENTIAL RECHARGE
	A	B***/****	C	D****	E	F****	G
YEAR	NON-INDIAN	INDIAN	TOTAL	Irrig. Eff.	ROGR	AK-CHIN	
1985	173,950*	5,330	179,276	68%	708,575	30,000	242,000
1986	145,320*	5,330	150,650	69%	583,388	30,000	196,100
1987	163,890**	5,330	169,520	70%	705,597	30,000	266,000
1988	192,660*	5,330	197,990	71%	751,633	30,000	233,200
						TOTAL	937,300

* Calculated value.

** Determined from Landsat image processing.

*** Estimated value, assumed constant

**** Source from ADWR Pinal AMA Office

ROGR = Groundwater and surface water combined, AMA-wide

A = E / (2.77/D)

G = (E+F) - (2.77C), AMA-wide

Average Consumptive Use = 2.77 AF/AC/YEAR

CHAPTER IV

MODEL CALIBRATION

Steady-State

The model was initially calibrated for steady-state groundwater flow conditions using water level data for circa 1900 (Thomsen and Baldys, 1985). The primary purpose for steady-state calibration was to refine the initial estimates of hydraulic conductivity. Initial estimates of hydraulic conductivity were derived from the ADWR Driller's Log Program and modified during the calibration process. Each model layer was calibrated independently since it was assumed that there was little to no vertical hydraulic gradient between each hydrogeologic unit during the pre-development era. The same starting water levels were assigned to both model layers. Figure 7 presents the starting water levels for circa 1900.

The model simulated ending water levels were compared to the starting water levels (Figures 14 and 15). Steady-state calibration reasonably simulated the regional groundwater flow system as evident by comparing water-level information.

Volumetric water budgets were also reviewed during the calibration process. The volumetric water budget provides an independent check of the overall acceptability of the model solution (McDonald and Harbaugh, 1988). If the model solution is valid, then total inflows and total outflows should equal the total change in storage. In the case of steady-state simulations where the change in storage is zero, then the volumetric water budget components of total inflows minus total outflows should also approach zero. The final volumetric water budget is presented in Table 9. Final calibrated hydraulic conductivity array for the steady-state simulation is in Appendix 8.

TABLE 9

PINAL AMA MODEL
STEADY-STATE VOLUMETRIC WATER BUDGET*

Units = Acre-Feet/Year

LAYER 1

INFLOW (per year)		OUTFLOW (per year)	
Storage:	0.00	Storage:	0.00
Constant Head:	29,000	Constant Head:	56,500
Recharge:	27,500	Recharge:	0.00
Total Inflow:	56,500	Total Outflow:	56,500

Inflow-Outflow = 0

LAYER 2

INFLOW (per year)		OUTFLOW (per year)	
Storage:	0.00	Storage:	0.00
Constant Head:	2,500	Constant Head:	2,500
Total Inflow:	2,500	Total Outflow:	2,500

Inflow-Outflow = 0

All values rounded to nearest 100

Transient-State

The model was calibrated for transient-state groundwater flow using measured water level data between winter 1984-85 (starting water levels) and winter 1988-89 (ending water levels). Measured ending water levels were compared to simulated ending water levels to evaluate the effect of each calibration run. Measured ending water levels for both model layers are presented in Figures 10 and 11. The calibration was considered complete when the final simulated ending water levels and flow directions were similar to the measured ending water levels and flow directions. Final calibrated ending water levels compared to ending measured water levels are presented in Figures 16 and 17. The difference between the final calibrated water levels and the measured ending water levels are presented in Figures 18 and 19.

As previously discussed, volumetric water budgets were reviewed during the calibration process. The final volumetric water budget is presented in Table 10. In 1988, approximately 37 million acre-feet of water was estimated in storage between land surface and a depth of 1,200 feet using the specific yield values in the model. The model estimated that approximately 754,000 acre-feet of water was depleted from storage during the four year simulation period.

Transient-state calibration consisted of identifying "problem areas" within the model that did not adequately simulate observed field conditions and then modifying the model input data. The input data were modified to achieve a better match between the model calibrated results and observed field conditions. Data were modified based upon the level of confidence of the original data. In general, the qualitative order of confidence in the original data is that estimates of recharge and vertical hydraulic conductivity were considered to be of least confidence and water-level data and

TABLE 10

PINAL AMA MODEL
FINAL CALIBRATED VOLUMETRIC WATER BUDGET*
TRANSIENT-STATE 1985-1988

Units = Acre-Feet/4 Years

INFLOW: (per 4 years)		OUTFLOW: (per 4 years)	
Constant Head:	166,300	Constant Head:	68,600
Wells:	0.00	Wells:	2,246,900
Recharge:	1,394,800	Recharge:	0.00
Total Inflow:	1,561,100	Total Outflow:	2,315,500

Inflow-Outflow: -754,400 Acre-Feet/4 Years

Annual Average
Units = Acre-Feet/Year

INFLOW: (per year)		OUTFLOW: (per year)	
Constant Head:	41,600	Constant Head:	17,100
Wells:	0.00	Wells:	561,800
Recharge:	348,700	Recharge:	0.00
Total Inflow:	390,300	Total Outflow:	578,900

Inflow-Outflow: -188,600 Acre-Feet/Year

* All values rounded to nearest 100

areal distribution of pumpage were considered to be of most confidence. Refer to Table 11 for the qualitative order of confidence of all the model input data.

TABLE 11

QUALITATIVE LEVEL OF CONFIDENCE RANKING OF THE ORIGINAL PINAL AMA MODEL INPUT DATA

MODEL INPUT DATA	
Recharge Estimates	Least Confident
Vertical Hydraulic Conductivity	
Vertical Distribution of Water Level Data	
Vertical Distribution of Pumpage	
Storage Component	
Hydraulic Conductivity	
Geologic contacts	
Water-Level Elevation	
Areal Distribution of Pumpage Data	Most Confident

A conceptual problem relating to the modeling of the groundwater system in the Eloy and Maricopa-Stanfield sub-basins was identified during transient-state calibration. Land subsidence resulting from aquifer compaction due to groundwater withdrawals was not addressed. Permanent change in the regional aquifer storage capacity must be taken into account when modeling transient-state groundwater flow conditions in the Pinal AMA.

Calibration Summary

The model was calibrated for both steady-state and transient-state flow conditions. Calibration of steady-state groundwater flow permitted the refinement of the areal distribution of hydraulic conductivity. Steady-state calibration reasonably simulated the regional groundwater flow system in both layers of the model.

Transient-state calibration consisted of addressing identified "problem areas" and modifying the original input data. Each calibration run compared the measured ending water levels to the simulated ending water levels. However, the model did not simulate transient groundwater flow as accurately as steady-state groundwater flow. In general, the model simulated groundwater flow more accurately in Layer 1 than in Layer 2, as evidenced by comparing water-level elevations and a statistical analysis of water-level difference. Table 12 presents the mean and standard deviation of the water-level elevation difference per model cell within four zones between the final calibrated water-levels and ending measured water levels. Four zones were identified to evaluate the model sensitivity. These zones were selected on the basis of the relatively high degree of certainty of the original water-level and geologic input data. Layer 1 simulated water level elevations that were a model-wide average of 12 feet below the ending measured water level elevations. Layer 2 simulated water-level elevations that were a model-wide average of 46 feet below the ending measured water levels.

TABLE 12

STATISTICAL ANALYSIS OF WATER LEVEL ELEVATION DIFFERENCE
TRANSIENT-STATE CALIBRATION

Final Calibrated Water Levels Minus the
Ending Measured Water Levels (1988-1989)

Layer 1 (UAU)		Layer 2 (LCU)	
MEAN	STANDARD DEVIATION	MEAN	STANDARD DEVIATION
-12.4 feet	23.9 feet	-45.6 feet	43.7 feet

Three general "problem areas" were identified during transient-state calibration and are illustrated in Figures 18 and 19. In portions of the Maricopa-Stanfield sub-basin, the model underestimated water level elevations in Layer 1 by 50 feet and Layer 2 over 100 feet. In the northern portion of the Eloy sub-basin the model underestimated water level elevations by 100 feet in Layer 2. However, in the southern portion of the Eloy sub-basin, the model overestimated and undersimulated water level elevations by 50 feet in Layer 1 and over 200 feet in Layer 2.

The poor simulation of water level elevations in these areas can be attributed to a combination of several factors. These factors include: an over or underestimation of surface water recharge and storage coefficient or specific yield; improper distribution of hydraulic conductivity and vertical distribution of pumpage; improper starting water level elevations where data were non-existent; and not addressing land subsidence resulting from aquifer compaction due to groundwater withdrawals.

CHAPTER V

SENSITIVITY ANALYSIS

A sensitivity analysis was conducted on the Pinal AMA model to determine how sensitive the model solution is to uncertainty in each input component. As is generally the case with numerical models, not all of the input components were known completely (i.e., uncertainty with the original data). The purpose of a sensitivity analysis is to determine which input components exert the most control over the model solution and, therefore, generate the largest potential errors. An improved understanding (i.e., reduction of the uncertainty) of the most influential input components would yield the greatest improvement for future model updates.

The procedure to test the sensitivity of the model consisted of changing a single input component over a reasonable range of values during a series of model runs. The input components that were changed included specific yield, storage coefficient, hydraulic conductivity, recharge, vertical conductance, and boundary conditions. These components were selected since they are the major input variables of the model.

As previously mentioned, four zones were identified within the model domain to evaluate the model sensitivity (Figure 20). Three measures were used to evaluate the model sensitivity within each zone. Two measures were the mean and standard deviation of the final calibrated water levels minus the simulated water levels for each sensitivity run in the selected zones. The third measure was the volumetric water budgets for each sensitivity run compared to the final calibrated water budget. Table 13 compares the mean and standard deviation of water-level changes within the selected zones and the percent change in storage from the final calibrated volumetric water budget. Comparing water-level changes indicate that in general, Layer 2 is more sensitive than Layer 1 to changes in the input components. Layer 2 is most sensitive to changes in vertical conductance (VCONT), specific yield and storage coefficient. Layer 1 is most sensitive to changes in VCONT and recharge. Appendix 9 contains a complete presentation of the statistical analysis.

The relative model-wide percent change in storage compared to the final calibrated water budget indicates that the model is sensitive to the input component of recharge. The final calibrated transient run simulated a model-wide decrease in the volume of water in storage at approximately 754,000 acre-feet for the 4-year period of 1985-1988. The relative percent change in storage compared to the final calibrated change in storage was estimated using the equation:

$$\frac{\text{(Change in Storage (Final Calibrated) - Change in Storage (Sensitivity Run))}}{\text{Change in Storage (Final Calibrated)}} \times 100$$

Interpretation of the statistics and comparing the water budgets indicate that the model overall is sensitive to most input parameters, including: VCONT, specific yield, storage coefficient, recharge and hydraulic conductivity. A better understanding of these input variables would help improve future model updates.

TABLE 13

SUMMARY OF ZONED SENSITIVITY STATISTICS

Final Calibrated Water Levels
Minus
Sensitivity Simulated Water Levels

(Feet)

	Layer 1 Mean	Layer 1 Standard Deviation	Layer 2 Mean	Layer 2 Standard Deviation	Percent* Change in Storage
Increase K, 2x	-1.9	7.1	-6.4	12.3	+12%
Decrease K, 2x	1.2	6.4	3.9	11.7	-6%
Decrease K, 5x	2.1	13.2	6.7	21.8	-10%
Increase Sy & S, 2x	-0.5	5.8	-13.7	13.3	-1%
Decrease Sy & S, 2x	1.2	7.3	26.1	18.5	+2%
Increase S, 10x	-0.5	1.1	-3.2	11.4	0%
Decrease S, 10x	0.1	0.2	-0.1	2.3	0
Decrease Sy, 3x	1.1	11.9	-1.2	4.4	+2%
Increase VCONT, 10x	14.9	12.3	-31.7	30.9	+1%
Decrease VCONT, 10x	-3.9	4.7	8.4	13.8	0%
Decrease Recharge, 15%	3.0	1.8	1.8	5.4	-27%
Increase Recharge, 15%	-3.0	1.8	-1.8	4.2	+27%
Decrease Recharge, 30%	5.9	3.7	2.9	6.6	-55%
Decrease Recharge, 50%	9.9	6.1	4.4	7.9	-90%
Decrease SCIP Recharge, 78%	7.2	9.6	2.8	8.3	-86%
Boundary Condition**	0.1	0.4	-0.02	0.6	+11%

Note:

K = Hydraulic Conductivity
Sy = Specific Yield
S = Storage Coefficient
VCONT = Vertical Conductance

* The relative percent change in storage of the sensitivity runs compared to the percent change in storage of the final calibrated run

** Boundary Condition = Constant head cells were changed to variable head cells simulating constant underflow using pumping or injection wells.

CHAPTER VI

CONCLUSION

The Phase Two preliminary groundwater flow model for the Pinal AMA represents the first step of an on-going modeling process to develop a sound technical management tool for predicting the impacts of future groundwater management scenarios. The model provides a regional understanding of the interrelationships between the groundwater flow system and groundwater pumpage and recharge.

The model reasonably simulates both regional steady-state and transient-state groundwater flow within the Pinal AMA. In 1988, approximately 37 million acre-feet of water was estimated in storage from land surface to a depth of 1,200 feet. The model simulated a net decrease in the volume of water in storage at approximately 754,000 acre-feet for the 4-year period of 1985-1988.

General areas were identified where the model did not accurately simulate actual field measured water level elevations or flow directions. These areas correspond to zones of significant model input data uncertainty and will need to be addressed prior to future model updates. These areas include the south-east and north-central portions of the Eloy sub-basin and the northern portion of the Maricopa-Stanfield sub-basin.

This phase of the model development did not take into account the introduction of Central Arizona Project (CAP) water into the region or the effects of aquifer compaction due to groundwater withdrawals. Leakage from the CAP canal distribution system and impacts from reduced pumpage in conjunction with an increase in CAP water use will need to be addressed in future model updates. Land subsidence due to aquifer compaction and its interrelationship with groundwater pumpage will also need to be addressed in future model updates.

A sensitivity analysis was conducted to determine how sensitive the model solution is to uncertainty in each input component. The effects on water-level elevation and flow direction change were quantified by varying a single input component. The results of the sensitivity analysis indicate that the model is most sensitive to vertical hydraulic interconnection between layers (VCONT), recharge, and the storage component, either specific yield or storage coefficient.

The usefulness of this phase of the model is two-fold. First, the model provides a cumulative source of hydrologic and geologic data for the Pinal AMA. Second, the model may be useful as a regional planning tool and should be used in conjunction with other analytical methods to evaluate future management scenarios. However, it is not intended to be used as a site-specific planning or permitting tool. Model data limitations and uncertainties prohibit the use of this model to provide more than a regional understanding of the hydrogeologic system.

CHAPTER VII

RECOMMENDATIONS

The Phase Two groundwater modeling effort has identified data deficiencies as the primary limitation of the ability to accurately simulate groundwater flow conditions in the Pinal AMA. The success of developing a sound groundwater management tool will be dependant on filling these data deficiencies. The recommendations listed below address these issues.

1. The model should be updated in approximately 5 years when sufficient data have been collected to better simulate groundwater flow within the Pinal AMA.

2. Several mechanisms should be used to refine aquifer characteristics (hydraulic conductivity and specific yield/storage coefficient). These mechanisms include collecting drill cuttings and performing particle-size analyses, and performing aquifer tests (single-well or multiple-well) wherever possible.

3. The vertical distribution of pumpage per aquifer unit needs to be refined. Spinner logs should be conducted to define the relative ratio of water production per aquifer unit.

4. The Assured Water Supply program should request applicants

to perform a detailed hydrologic study including aquifer - pump tests. If aquifer-pump tests are conducted, they should be designed to collect the maximum potential information to assist in collecting more detailed data in areas where the water will be used.

5. The ADWR Basic Data Section should continually revise the index-well line to phase out wells that have insufficient well construction data or are completed in multiple aquifer units. TV scans of selected wells should continue to be performed.

6. ADWR Operations Division should not accept applications to drill a well which are not complete, nor should they accept well completion reports which are not complete.

REFERENCES CITED

Anderson, T.W., 1968, Electric-analog analysis of ground-water depletion in central Arizona: U.S. Geological Survey - Water Supply Paper 1860, 21 p.

Leake, S.A., and Prudic, D.E., 1988, Documentation of a computer program to simulate aquifer-system compaction using the modular finite-difference ground-water flow model: U.S. Geological Survey Open-File Report 88-482, 80 p.

Lee, W.T., 1904, Underground waters of Gila Valley, Arizona: U.S. Geological Survey- Water Supply Paper 104, 72 p.

Long, M., and Erb, S., 1980, Computerized depth interval determination of groundwater characteristics from well driller's Logs: Hydrology and Water Resources in Arizona and the Southwest, Arizona-Nevada Academy of Sciences, 203-206 pp.

McDonald, M.G., and Harbaugh, A.W., 1988, A modular three-dimensional finite-difference ground-water flow model: U.S. Geological Survey Techniques of Water-Resource Investigations Book 6, Chapter A1.

Pool, D.R., 1988, Oral Communication, U.S. Geological Survey, Tucson, Arizona.

Thomsen, B.W., 1988, Oral Communication, U.S. Geological Survey, Phoenix, Arizona.

Thomsen, B.W., and Baldys III, S., 1985, Ground-water conditions in and near the Gila Indian Reservation, South-Central Arizona: U.S. Geological Survey Water Resources Investigation 85-4073, 2 Plates.

U.S.Bureau of Reclamation, 1976, Lower Colorado Region - Volume 1, Central Arizona Project - Geology and groundwater resources report - Maricopa and Pinal Counties, Arizona: U.S. Bureau of Reclamation.

Wickham, M.P., and Corkhill, E.F., 1989, Pinal AMA regional groundwater flow model - Phase one, Hydrogeologic framework and water budget: Arizona Department Water Resources, June 1, 1989 63 p.

APPENDIX 1

DOCUMENT APPROVAL SIGN-OFF SHEET

COLOR

PINAL ACTIVE MANAGEMENT AREA

REGIONAL GROUNDWATER FLOW MODEL

PHASE TWO: NUMERICAL MODEL, CALIBRATION, SENSITIVITY, AND RECOMMENDATIONS

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DEPARTMENT OF WATER RESOURCES
HYDROLOGY DIVISION

M E M O R A N D U M

TO: Hydrology Staff

THROUGH: Greg Wallace GW

FROM: Doug Toy DT

DATE: January 25, 1991

SUBJECT: Document Approval Sign-off Sheet

All technical reports written and published by the Hydrology Division will include a sign-off sheet. The purpose of the sign-off sheet is to provide assurance that the report is consistent with accepted professional hydrologic practices and ADWR policy. Outlined below are definitions of who qualifies as an Author and sign-off responsibilities of the Chief Hydrologist and Deputy Director.

AUTHOR:

A person who had immediate and active charge of all or a portion of the research and a substantial degree of responsibility for part or all of the finished product.

A person who wrote all or a substantial portion of the report.

Generally no more than four Authors should be designated for each report. All other persons contributing in the research effort but do not qualify as authors should be mentioned in the Acknowledgment section of the report.

CHIEF HYDROLOGIST:

Responsible for technical continuity and accuracy within the report.

Acknowledges that the technical portions of the report are consistent with accepted professional practices.

Technical data and conclusions are consistent with previous Hydrology Division reports. However, if the conclusions are not consistent, then the report adequately documents these new findings.

DEPUTY DIRECTOR:

Acknowledges that the report is consistent with ADWR policy, including correct authors and Chief Hydrologist sign-off.

DT/BH/lw

APPENDIX 2

MODEL GRID IN RELATION TO TOWNSHIP-RANGE-SECTION

07/12/90

PINAL AMA MODEL GRID IN RELATION TO TOWNSHIP-RANGE-SECTION

Model Row	Model Column	Model Cell	Cadastral Location #1	Cadastral Location #2	Cadastral Location #3	Cadastral Location #4
2	2	49	D040203	D040204	D040209	D040210
2	3	50	D040202	D040211		
2	4	51	D040201	D040212		
2	5	52	D040306	D040307		
2	6	53	D040305	D040308		
2	7	54	D040304	D040309		
2	8	55	D040303	D040310		
2	9	56	D040302	D040311		
2	10	57	D040301	D040312		
2	11	58	D040406	D040407		
2	12	59	D040405	D040408		
2	13	60	D040404	D040409		
3	2	96	D040215	D040216		
3	3	97	D040214			
3	4	98	D040213			
3	5	99	D040318			
3	6	100	D040317			
3	7	101	D040316			
3	8	102	D040315			
3	9	103	D040314			
3	10	104	D040313			
3	11	105	D040418			
3	12	106	D040417			
3	13	107	D040416			
3	14	108	D040415			
3	15	109	D040414			
3	32	126	D040715			
4	2	143	D040221	D040222		
4	3	144	D040223			
4	4	145	D040224			
4	5	146	D040319			
4	6	147	D040320			
4	7	148	D040321			
4	8	149	D040322			
4	9	150	D040323			
4	10	151	D040324			
4	11	152	D040419			
4	12	153	D040420			
4	13	154	D040421			
4	14	155	D040422			
4	15	156	D040423			
4	16	157	D040424			
4	32	173	D040722			
5	2	190	D040227	D040228		
5	3	191	D040226			
5	4	192	D040225			
5	5	193	D040330			
5	6	194	D040329			
5	7	195	D040328			

PINAL AMA MODEL GRID IN RELATION TO TOWNSHIP-RANGE-SECTION

Model Row	Model Column	Model Cell	Cadastral Location #1	Cadastral Location #2	Cadastral Location #3	Cadastral Location #4
5	8	196	D040327			
5	9	197	D040326			
5	10	198	D040325			
5	11	199	D040430			
5	12	200	D040429			
5	13	201	D040428			
5	14	202	D040427			
5	15	203	D040426			
5	16	204	D040425			
5	32	220	D040727			
6	2	237	D040233	D040234		
6	3	238	D040235			
6	4	239	D040236			
6	5	240	D040331			
6	6	241	D040332			
6	7	242	D040333			
6	8	243	D040334			
6	9	244	D040335			
6	10	245	D040336			
6	11	246	D040431			
6	12	247	D040432			
6	13	248	D040433			
6	14	249	D040434			
6	15	250	D040435			
6	16	251	D040436			
6	31	266	D040733			
6	32	267	D040734			
7	2	284	D050203	D050204		
7	3	285	D050202			
7	4	286	D050201			
7	5	287	D050306			
7	6	288	D050305			
7	7	289	D050304			
7	8	290	D050303			
7	9	291	D050302			
7	10	292	D050301			
7	11	293	D050406			
7	12	294	D050405			
7	13	295	D050404			
7	14	296	D050403			
7	15	297	D050402			
7	16	298	D050401			
7	31	313	D050704			
7	32	314	D050703			
8	2	331	D050203	D050204		
8	3	332	D050202			
8	4	333	D050201			
8	5	334	D050303			
8	6	335	D050306			

PINAL AMA MODEL GRID IN RELATION TO TOWNSHIP-RANGE-SECTION

Model Row	Model Column	Model Cell	Cadastral Location #1	Cadastral Location #2	Cadastral Location #3	Cadastral Location #4
8	7	336	D050304			
8	8	337	D050303			
8	9	338	D050302			
8	10	339	D050301			
8	11	340	D050407			
8	12	341	D050408			
8	13	342	D050409			
8	14	343	D050410			
8	15	344	D050411			
8	16	345	D050412			
8	31	360	D050709			
8	32	361	D050710			
9	2	378	D050209	D050210		
9	3	379	D050211			
9	4	380	D050212			
9	5	381	D050307			
9	6	382	D050308			
9	7	383	D050309			
9	8	384	D050310			
9	9	385	D050311			
9	10	386	D050312			
9	11	387	AK-CHIN			
9	12	388	AK-CHIN			
9	13	389	AK-CHIN			
9	14	390	AK-CHIN			
9	15	391	AK-CHIN			
9	16	392	AK-CHIN			
9	31	407	D050709			
9	32	408	D050710			
10	4	427	D050213			
10	5	428	D050318			
10	6	429	D050317			
10	7	430	D050316			
10	8	431	D050315			
10	9	432	D050314			
10	10	433	D050313			
10	11	434	AK-CHIN			
10	12	435	AK-CHIN			
10	13	436	AK-CHIN			
10	14	437	AK-CHIN			
10	15	438	AK-CHIN			
10	16	439	AK-CHIN			
10	17	440	D050518			
10	18	441	D050517			
10	19	442	D050516			
10	24	447	D050617			
10	25	448	D050616			
10	26	449	D050615			
10	27	450	D050614			

PINAL AMA MODEL GRID IN RELATION TO TOWNSHIP-RANGE-SECTION

Model Row	Model Column	Model Cell	Cadastral Location #1	Cadastral Location #2	Cadastral Location #3	Cadastral Location #4
10	28	451	D050613			
10	31	454	D050716			
10	32	455	D050715			
11	3	473	D050223			
11	4	474	D050224			
11	5	475	D050319			
11	6	476	D050320			
11	7	477	D050321			
11	8	478	D050322			
11	9	479	D050323			
11	10	480	D050324			
11	11	481	AK-CHIN			
11	12	482	AK-CHIN			
11	13	483	AK-CHIN			
11	14	484	AK-CHIN			
11	15	485	AK-CHIN			
11	16	486	AK-CHIN			
11	17	487	D050519			
11	18	488	D050520			
11	19	489	D050521			
11	20	490	D050522			
11	23	493	D050619			
11	24	494	D050620			
11	25	495	D050621			
11	26	496	D050622			
11	27	497	D050623			
11	28	498	D050624			
11	31	501	D050721			
11	32	502	D050722			
12	3	520	D050226			
12	4	521	D050225			
12	5	522	D050330			
12	6	523	D050329			
12	7	524	D050328			
12	8	525	D050327			
12	9	526	D050326			
12	10	527	D050325			
12	11	528	AK-CHIN			
12	12	529	AK-CHIN			
12	13	530	AK-CHIN			
12	14	531	AK-CHIN			
12	15	532	AK-CHIN			
12	16	533	AK-CHIN			
12	17	534	D050530			
12	18	535	D050529			
12	19	536	D050528			
12	20	537	D050527			
12	21	538	D050526			
12	22	539	D050525			

PINAL AMA MODEL GRID IN RELATION TO TOWNSHIP-RANGE-SECTION

Model Row	Model Column	Model Cell	Cadastral Location #1	Cadastral Location #2	Cadastral Location #3	Cadastral Location #4
12	23	540	D050630			
12	24	541	D050629			
12	25	542	D050628			
12	26	543	D050627			
12	27	544	D050626			
12	28	545	D050625			
12	31	548	D050728			
12	32	549	D050727			
13	2	566	D050233	D050234		
13	3	567	D050235			
13	4	568	D050236			
13	5	569	D050331			
13	6	570	D050332			
13	7	571	D050333			
13	8	572	D050334			
13	9	573	D050335			
13	10	574	D050336			
13	11	575	AK-CHIN			
13	12	576	AK-CHIN			
13	13	577	AK-CHIN			
13	14	578	AK-CHIN			
13	15	579	AK-CHIN			
13	16	580	AK-CHIN			
13	17	581	D050531			
13	18	582	D050532			
13	19	583	D050533			
13	20	584	D050534			
13	21	585	D050535			
13	22	586	D050536			
13	23	587	D050631			
13	24	588	D050632			
13	25	589	D050633			
13	26	590	D050634			
13	27	591	D050635			
13	28	592	D050636			
13	29	593	D050731			
13	31	595	D050733			
13	32	596	D050734			
14	2	613	D060203	D060204		
14	3	614	D060202			
14	4	615	D060201			
14	5	616	D060300			
14	6	617	D060306			
14	7	618	D060305			
14	8	619	D060304			
14	9	620	D060303			
14	10	621	D060302			
14	11	622	D060301			
14	12	623	D060406			

PINAL AMA MODEL GRID IN RELATION TO TOWNSHIP-RANGE-SECTION

Model Row	Model Column	Model Cell	Cadastral Location #1	Cadastral Location #2	Cadastral Location #3	Cadastral Location #4
14	13	624	D060405			
14	14	625	D060404			
14	15	626	D060403			
14	16	627	D060402			
14	17	628	D060501			
14	18	629	D060506			
14	19	630	D060505			
14	20	631	D060504			
14	21	632	D060503			
14	22	633	D060502			
14	23	634	D060601			
14	24	635	D060606			
14	25	636	D060605			
14	26	637	D060604			
14	27	638	D060603			
14	28	639	D060602			
14	29	640	D060701			
14	30	641	D060706			
14	31	642	D060705			
14	32	643	D060704			
14	33	644	D060703			
14	34	645	D060702			
14	35	646	D060801			
14	36	647	D060806			
14	37	648	D060805			
14	38	649	D060804			
14	39	650	D060803			
14	40	651	D060802			
14	41	652	D060901			
14	42	653	D060906			
14	43	654	D060905			
14	44	655	D060904			
14	45	656	D060902	D060903		
14	46	657	D060901			
15	2	660	D060209	D0602010		
15	3	661	D060211			
15	4	662	D060212			
15	5	663	D060300			
15	6	664	D060307			
15	7	665	D060308			
15	8	666	D060309			
15	9	667	D060310			
15	10	668	D060311			
15	11	669	D060312			
15	12	670	D060407			
15	13	671	D060408			
15	14	672	D060409			
15	15	673	D060410			
15	16	674	D060411			

PINAL AMA MODEL GRID IN RELATION TO TOWNSHIP-RANGE-SECTION

Model Row	Model Column	Model Cell	Cadastral Location #1	Cadastral Location #2	Cadastral Location #3	Cadastral Location #4
15	17	675	D060512			
15	18	676	D060507			
15	19	677	D060508			
15	20	678	D060509			
15	21	679	D060510			
15	22	680	D060511			
15	23	681	D060512			
15	24	682	D060607			
15	25	683	D060608			
15	26	684	D060609			
15	27	685	D060610			
15	28	686	D060611			
15	29	687	D060612			
15	30	688	D060707			
15	31	689	D060708			
15	32	690	D060709			
15	33	691	D060710			
15	34	692	D060711			
15	35	693	D060712			
15	36	694	D060807			
15	37	695	D060808			
15	38	696	D060809			
15	39	697	D060810			
15	40	698	D060811			
15	41	699	D060812			
15	42	700	D060907			
15	43	701	D060908			
15	44	702	D060909			
15	45	703	D060910	D060911		
15	46	704	D060912			
16	3	708	D060214			
16	4	709	D060213			
16	5	710	D060200			
16	6	711	D060318			
16	7	712	D060317			
16	8	713	D060316			
16	9	714	D060315			
16	10	715	D060314			
16	11	716	D060313			
16	12	717	D060418			
16	13	718	D060417			
16	14	719	D060416			
16	15	720	D060415			
16	16	721	D060414			
16	17	722	D060513			
16	18	723	D060518			
16	19	724	D060517			
16	20	725	D060516			
16	21	726	D060515			

PINAL AMA MODEL GRID IN RELATION TO TOWNSHIP-RANGE-SECTION

Model Row	Model Column	Model Cell	Cadastral Location #1	Cadastral Location #2	Cadastral Location #3	Cadastral Location #4
16	22	727	D060514			
16	23	728	D060513			
16	24	729	D060618			
16	25	730	D060617			
16	26	731	D060616			
16	27	732	D060615			
16	28	733	D060614			
16	29	734	D060713			
16	30	735	D060718			
16	31	736	D060717			
16	32	737	D060716			
16	33	738	D060715			
16	34	739	D060714			
16	35	740	D060713			
16	36	741	D060818			
16	37	742	D060817			
16	38	743	D060816			
16	39	744	D060815			
16	40	745	D060814			
16	41	746	D060813			
16	42	747	D060918			
16	43	748	D060917			
16	44	749	D060916			
16	45	750	D060915	D060914		
16	46	751	D060913			
17	3	755	D060223			
17	4	756	D060224			
17	5	757	D060200			
17	6	758	D060319			
17	7	759	D060320			
17	8	760	D060321			
17	9	761	D060322			
17	10	762	D060323			
17	11	763	D060324			
17	12	764	D060419			
17	13	765	D060420			
17	14	766	D060421			
17	15	767	D060422			
17	16	768	D060423			
17	17	769	D060424			
17	18	770	D060519			
17	19	771	D060520			
17	20	772	D060521			
17	21	773	D060522			
17	22	774	D060523			
17	23	775	D060524			
17	24	776	D060619			
17	25	777	D060620			
17	26	778	D060621			

PINAL AMA MODEL GRID IN RELATION TO TOWNSHIP-RANGE-SECTION

Model Row	Model Column	Model Cell	Cadastral Location #1	Cadastral Location #2	Cadastral Location #3	Cadastral Location #4
17	27	779	D060622			
17	28	780	D060623			
17	29	781	D060624			
17	30	782	D060719			
17	31	783	D060720			
17	32	784	D060721			
17	33	785	D060722			
17	34	786	D060723			
17	35	787	D060724			
17	36	788	D060819			
17	37	789	D060820			
17	38	790	D060821			
17	39	791	D060822			
17	40	792	D060823			
17	41	793	D060824			
17	42	794	D060919			
17	43	795	D060920			
17	44	796	D060921			
17	45	797	D060923			
17	46	798	D060924			
18	7	806	D060329			
18	8	807	D060328			
18	9	808	D060327			
18	10	809	D060326			
18	11	810	D060325			
18	12	811	D060430			
18	13	812	D060429			
18	14	813	D060428			
18	15	814	D060427			
18	16	815	D060426			
18	17	816	D060425			
18	18	817	D060530			
18	19	818	D060529			
18	20	819	D060528			
18	21	820	D060527			
18	22	821	D060526			
18	23	822	D060525			
18	24	823	D060630			
18	25	824	D060629			
18	26	825	D060628			
18	27	826	D060627			
18	28	827	D060626			
18	29	828	D060625			
18	30	829	D060730			
18	31	830	D060729			
18	32	831	D060728			
18	33	832	D060727			
18	34	833	D060726			
18	35	834	D060725			

PINAL AMA MODEL GRID IN RELATION TO TOWNSHIP-RANGE-SECTION

Model Row	Model Column	Model Cell	Cadastral Location #1	Cadastral Location #2	Cadastral Location #3	Cadastral Location #4
18	36	835	D060830			
18	37	836	D060829			
18	38	837	D060828			
18	39	838	D060827			
18	40	839	D060826			
18	41	840	D060825			
18	42	841	D060930			
18	43	842	D060929			
18	44	843	D060928			
18	45	844	D060927	D060926		
18	46	845	D060925			
19	5	851	D060200			
19	6	852	D060331			
19	7	853	D060332			
19	8	854	D060333			
19	9	855	D060334			
19	10	856	D060335			
19	11	857	D060336			
19	12	858	D060431			
19	13	859	D060432			
19	14	860	D060433			
19	15	861	D060434			
19	16	862	D060435			
19	17	863	D060436			
19	18	864	D060531			
19	19	865	D060532			
19	20	866	D060533			
19	21	867	D060534			
19	22	868	D060535			
19	23	869	D060536			
19	24	870	D060631			
19	25	871	D060632			
19	26	872	D060633			
19	27	873	D060634			
19	28	874	D060635			
19	29	875	D060636			
19	30	876	D060731			
19	31	877	D060732			
19	32	878	D060733			
19	33	879	D060734			
19	34	880	D060735			
19	35	881	D060736			
19	36	882	D060831			
19	37	883	D060832			
19	38	884	D060833			
19	39	885	D060834			
19	40	886	D060835			
19	41	887	D060836			
19	42	888	D060931			

PINAL AMA MODEL GRID IN RELATION TO TOWNSHIP-RANGE-SECTION

Model Row	Model Column	Model Cell	Cadastral Location #1	Cadastral Location #2	Cadastral Location #3	Cadastral Location #4
19	43	889	D060932			
19	44	890	D060933			
19	45	891	D060934	D060935		
20	5	898	D070306			
20	6	899	D070305			
20	7	900	D070304			
20	8	901	D070303			
20	9	902	D070302			
20	10	903	D070301			
20	11	904	D070406			
20	12	905	D070405			
20	13	906	D070404			
20	14	907	D070403			
20	15	908	D070402			
20	16	909	D070401			
20	17	910	D070400			
20	18	911	D070506			
20	19	912	D070505			
20	20	913	D070504			
20	21	914	D070503			
20	22	915	D070502			
20	23	916	D070601			
20	24	917	D070606			
20	25	918	D070605			
20	26	919	D070604			
20	27	920	D070603			
20	28	921	D070602			
20	29	922	D070701			
20	30	923	D070706			
20	31	924	D070705			
20	32	925	D070704			
20	33	926	D070703			
20	34	927	D070702			
20	35	928	D070701			
20	36	929	D070806			
20	37	930	D070805			
20	38	931	D070804			
20	39	932	D070803			
20	40	933	D070802			
20	41	934	D070801			
20	42	935	D070906			
20	43	936	D070905			
20	44	937	D070904			
20	45	938	D070903	D070902		
21	5	945	D070307			
21	6	946	D070308			
21	7	947	D070309			
21	8	948	D070310			
21	9	949	D070311			

PINAL AMA MODEL GRID IN RELATION TO TOWNSHIP-RANGE-SECTION

Model Row	Model Column	Model Cell	Cadastral Location #1	Cadastral Location #2	Cadastral Location #3	Cadastral Location #4
21	10	950	D070312			
21	11	951	D070407			
21	12	952	D070408			
21	13	953	D070409			
21	14	954	D070410			
21	15	955	D070411			
21	16	956	D070412			
21	17	957	D070400			
21	18	958	D070507			
21	19	959	D070508			
21	20	960	D070509			
21	21	961	D070510			
21	22	962	D070511			
21	23	963	D070512			
21	24	964	D070607			
21	25	965	D070608			
21	26	966	D070609			
21	29	969	D070612			
21	30	970	D070707			
21	31	971	D070708			
21	32	972	D070709			
21	33	973	D070710			
21	34	974	D070711			
21	35	975	D070712			
21	36	976	D070807			
21	37	977	D070808			
21	38	978	D070809			
21	39	979	D070810			
21	40	980	D070811			
21	41	981	D070812			
21	42	982	D070907			
21	43	983	D070908			
21	44	984	D070909			
21	45	985	D070910	D070911		
22	7	994	D070316			
22	8	995	D070315			
22	9	996	D070314			
22	10	997	D070313			
22	11	998	D070418			
22	12	999	D070417			
22	13	1000	D070416			
22	14	1001	D070415			
22	15	1002	D070414			
22	16	1003	D070413			
22	17	1004	D070400			
22	18	1005	D070518			
22	19	1006	D070517			
22	20	1007	D070516			
22	21	1008	D070515			

PINAL AMA MODEL GRID IN RELATION TO TOWNSHIP-RANGE-SECTION

Model Row	Model Column	Model Cell	Cadastral Location #1	Cadastral Location #2	Cadastral Location #3	Cadastral Location #4
22	22	1009	D070514			
22	23	1010	D070613			
22	24	1011	D070518			
22	25	1012	D070617			
22	26	1013	D070616			
22	29	1016	D070613			
22	30	1017	D070718			
22	31	1018	D070717			
22	32	1019	D070716			
22	33	1020	D070715			
22	34	1021	D070714			
22	35	1022	D070713			
22	36	1023	D070818			
22	37	1024	D070817			
22	38	1025	D070816			
22	39	1026	D070815			
22	40	1027	D070814			
22	41	1028	D070813			
22	42	1029	D070918			
22	43	1030	D070917			
22	44	1031	D070916			
22	45	1032	D070915	D070914		
23	8	1042	D070322			
23	9	1043	D070323			
23	10	1044	D070324			
23	11	1045	D070419			
23	12	1046	D070420			
23	13	1047	D070421			
23	14	1048	D070422			
23	15	1049	D070423			
23	16	1050	D070424			
23	17	1051	D070400			
23	18	1052	D070519			
23	19	1053	D070520			
23	20	1054	D070521			
23	21	1055	D070522			
23	22	1056	D070523			
23	23	1057	D070524			
23	24	1058	D070619			
23	25	1059	D070620			
23	26	1060	D070621			
23	29	1063	D070724			
23	30	1064	D070719			
23	31	1065	D070720			
23	32	1066	D070721			
23	33	1067	D070722			
23	34	1068	D070723			
23	35	1069	D070624			
23	36	1070	D070819			

PINAL AMA MODEL GRID IN RELATION TO TOWNSHIP-RANGE-SECTION

Model Row	Model Column	Model Cell	Cadastral Location #1	Cadastral Location #2	Cadastral Location #3	Cadastral Location #4
23	37	1071	D070820			
23	38	1072	D070821			
23	39	1073	D070822			
23	40	1074	D070823			
23	41	1075	D070824			
23	42	1076	D070919			
23	43	1077	D070920			
23	44	1078	D070921			
23	45	1079	D070922	D070923		
24	8	1089	D070327			
24	9	1090	D070326			
24	10	1091	D070325			
24	11	1092	D070430			
24	12	1093	D070429			
24	13	1094	D070428			
24	14	1095	D070427			
24	15	1096	D070426			
24	16	1097	D070425			
24	17	1098	D070400			
24	18	1099	D070530			
24	19	1100	D070529			
24	20	1101	D070528			
24	21	1102	D070527			
24	22	1103	D070526			
24	23	1104	D070525			
24	24	1105	D070630			
24	25	1106	D070629			
24	26	1107	D070628			
24	27	1108	D070627			
24	29	1110	D070625			
24	30	1111	D070730			
24	31	1112	D070729			
24	32	1113	D070728			
24	33	1114	D070727			
24	34	1115	D070726			
24	35	1116	D070725			
24	36	1117	D070830			
24	37	1118	D070829			
24	38	1119	D070828			
24	39	1120	D070827			
24	40	1121	D070826			
24	41	1122	D070825			
24	42	1123	D070930			
24	43	1124	D070929			
24	44	1125	D070928			
24	45	1126	D070927	D070926		
25	12	1140	D070432			
25	13	1141	D070433			
25	14	1142	D070434			

PINAL AMA MODEL GRID IN RELATION TO TOWNSHIP-RANGE-SECTION

Model Row	Model Column	Model Cell	Cadastral Location #1	Cadastral Location #2	Cadastral Location #3	Cadastral Location #4
25	15	1143	D070435			
25	16	1144	D070436			
25	17	1145	D070400			
25	18	1146	D070531			
25	19	1147	D070532			
25	20	1148	D070533			
25	21	1149	D070534			
25	22	1150	D070535			
25	23	1151	D070536			
25	24	1152	D070631			
25	25	1153	D070632			
25	26	1154	D070633			
25	27	1155	D070634			
25	28	1156	D070635			
25	29	1157	D070636			
25	30	1158	D070731			
25	31	1159	D070732			
25	32	1160	D070733			
25	33	1161	D070734			
25	34	1162	D070735			
25	35	1163	D070736			
25	36	1164	D070831			
25	37	1165	D070832			
25	38	1166	D070833			
25	39	1167	D070834			
25	40	1168	D070835			
25	41	1169	D070836			
25	42	1170	D070931			
25	43	1171	D070932			
25	44	1172	D070933			
26	13	1188	D080404			
26	14	1189	D080403			
26	15	1190	D080402			
26	16	1191	D080401			
26	17	1192	D080506			
26	18	1193	D080505			
26	19	1194	D080504			
26	20	1195	D080503			
26	21	1196	D080502			
26	22	1197	D080501			
26	23	1198	D080500			
26	24	1199	D080606			
26	25	1200	D080605			
26	26	1201	D080604			
26	27	1202	D080603			
26	28	1203	D080602			
26	29	1204	D080601			
26	30	1205	D080706			
26	31	1206	D080705			

PINAL AMA MODEL GRID IN RELATION TO TOWNSHIP-RANGE-SECTION

Model Row	Model Column	Model Cell	Cadastral Location #1	Cadastral Location #2	Cadastral Location #3	Cadastral Location #4
26	32	1207	D080704			
26	33	1208	D080703			
26	34	1209	D080702			
26	35	1210	D080701			
26	36	1211	D080806			
26	37	1212	D080805			
26	38	1213	D080804			
26	39	1214	D080803			
26	40	1215	D080802			
26	41	1216	D080801			
26	42	1217	D080906			
26	43	1218	D080905			
27	14	1236	D080410			
27	15	1237	D080411			
27	16	1238	D080412			
27	17	1239	D080507			
27	18	1240	D080508			
27	19	1241	D080509			
27	20	1242	D080510			
27	21	1243	D080511			
27	22	1244	D080512			
27	24	1246	D080607			
27	25	1247	D080608			
27	26	1248	D080609			
27	27	1249	D080610			
27	28	1250	D080611			
27	29	1251	D080612			
27	30	1252	D080707			
27	31	1253	D080708			
27	32	1254	D080709			
27	33	1255	D080710			
27	34	1256	D080711			
27	35	1257	D080712			
27	36	1258	D080807			
27	37	1259	D080808			
27	38	1260	D080809			
27	39	1261	D080810			
27	40	1262	D080811			
27	41	1263	D080812			
27	42	1264	D080907			
27	43	1265	D080908			
28	14	1283	D080415			
28	15	1284	D080414			
28	16	1285	D080413			
28	17	1286	D080518			
28	18	1287	D080517			
28	19	1288	D080516			
28	20	1289	D080515			
28	21	1290	D080514			

PINAL AMA MODEL GRID IN RELATION TO TOWNSHIP-RANGE-SECTION

Model Row	Model Column	Model Cell	Cadastral Location #1	Cadastral Location #2	Cadastral Location #3	Cadastral Location #4
28	25	1294	D080617			
28	26	1295	D080616			
28	27	1296	D080615			
28	28	1297	D080614			
28	29	1298	D080613			
28	30	1299	D080718			
28	31	1300	D080717			
28	32	1301	D080716			
28	33	1302	D080715			
28	34	1303	D080714			
28	35	1304	D080713			
28	36	1305	D080818			
28	37	1306	D080817			
28	38	1307	D080816			
28	39	1308	D080815			
28	40	1309	D080814			
28	41	1310	D080813			
28	42	1311	D080918			
28	43	1312	D080917			
29	17	1333	D080519			
29	18	1334	D080520			
29	19	1335	D080521			
29	20	1336	D080522			
29	23	1339	D080524			
29	24	1340	D080619			
29	25	1341	D080620			
29	26	1342	D080621			
29	27	1343	D080622			
29	28	1344	D080623			
29	29	1345	D080724			
29	30	1346	D080719			
29	31	1347	D080720			
29	32	1348	D080721			
29	33	1349	D080722			
29	34	1350	D080723			
29	35	1351	D080724			
29	36	1352	D080819			
29	37	1353	D080820			
29	38	1354	D080821			
29	39	1355	D080822			
29	40	1356	D080823			
29	41	1357	D080525			
29	42	1358	D080919			
29	43	1359	D080920			
30	23	1386	D080625			
30	24	1387	D080630			
30	25	1388	D080629			
30	26	1389	D080628			
30	27	1390	D080627			

PINAL AMA MODEL GRID IN RELATION TO TOWNSHIP-RANGE-SECTION

Model Row	Model Column	Model Cell	Cadastral Location #1	Cadastral Location #2	Cadastral Location #3	Cadastral Location #4
30	28	1391	D080626			
30	29	1392	D080625			
30	30	1393	D080730			
30	31	1394	D080729			
30	32	1395	D080728			
30	33	1396	D080727			
30	34	1397	D080726			
30	35	1398	D080725			
30	36	1399	D080830			
30	37	1400	D080829			
30	38	1401	D080828			
30	39	1402	D080827			
30	40	1403	D080826			
30	41	1404	D080825			
30	42	1405	D080930			
30	43	1406	D080929			
31	23	1433	D080536			
31	24	1434	D080631			
31	25	1435	D080632			
31	26	1436	D080633			
31	27	1437	D080634			
31	28	1438	D080635			
31	29	1439	D080636			
31	30	1440	D080731			
31	31	1441	D080732			
31	32	1442	D080733			
31	33	1443	D080734			
31	34	1444	D080735			
31	35	1445	D080736			
31	36	1446	D080831			
31	37	1447	D080832			
31	38	1448	D080833			
31	39	1449	D080834			
31	40	1450	D080835			
31	41	1451	D080836			
31	42	1452	D080931			
31	43	1453	D080932			
31	44	1454	D080933			
32	24	1481	D090605			
32	25	1482	D090604			
32	26	1483	D090603			
32	27	1484	D090602			
32	28	1485	D090601			
32	29	1486	D090600			
32	30	1487	D090706			
32	31	1488	D090705			
32	32	1489	D090704			
32	33	1490	D090703			
32	34	1491	D090702			

PINAL AMA MODEL GRID IN RELATION TO TOWNSHIP-RANGE-SECTION

Model Row	Model Column	Model Cell	Cadastral Location #1	Cadastral Location #2	Cadastral Location #3	Cadastral Location #4
32	35	1492	D090701			
32	36	1493	D090806			
32	37	1494	D090805			
32	38	1495	D090804			
32	39	1496	D090803			
32	40	1497	D090802			
32	41	1498	D090801			
32	42	1499	D090906			
32	43	1500	D090905			
32	44	1501	D090904			
33	27	1531	D090611	D090614		
33	28	1532	D090612	D090613		
33	29	1533	D090600	D090600		
33	30	1534	D090707			
33	31	1535	D090708			
33	32	1536	D090709			
33	33	1537	D090710			
33	34	1538	D090711			
33	35	1539	D090712			
33	36	1540	D090807			
33	37	1541	D090808			
33	38	1542	D090809			
33	39	1543	D090810			
33	40	1544	D090811			
33	41	1545	D090812			
33	42	1546	D090907			
33	43	1547	D090908			
34	29	1580	D090600			
34	30	1581	D090719	D090718		
34	31	1582	D090717	D090720		
34	32	1583	D090716	D090721		
34	33	1584	D090715	D090722		
34	34	1585	D090714	D090723		
34	35	1586	D090713	D090724		
34	36	1587	D090818	D090819		
34	37	1588	D090817	D090820		
34	38	1589	D090816	D090821		
34	39	1590	D090815	D090822		
34	40	1591	D090814	D090823		
34	41	1592	D090813	D090324		
34	42	1593	D090918	D090919		
34	43	1594	D090917	D090920		
34	28	1579	D090625	D090636		
35	29	1627	D090600	D090600		
35	30	1628	D090730			
35	31	1629	D090729			
35	32	1630	D090728			
35	33	1631	D090727			
35	34	1632	D090726			

PINAL AMA MODEL GRID IN RELATION TO TOWNSHIP-RANGE-SECTION

Model Row	Model Column	Model Cell	Cadastral Location #1	Cadastral Location #2	Cadastral Location #3	Cadastral Location #4
35	35	1633	D090725			
35	36	1634	D090830			
35	37	1635	D090829			
35	38	1636	D090828			
35	39	1637	D090827			
35	40	1638	D090826			
35	41	1639	D090825			
35	42	1640	D090930			
35	43	1641	D090929			
35	44	1642	D090928			
35	45	1643	D090927			
36	27	1672	D100602			
36	28	1673	D100601			
36	29	1674	D100706			
36	30	1675	D100605	D100631		
36	31	1676	D100604	D100632		
36	32	1677	D100703	D100733		
36	33	1678	D100702	D100734		
36	34	1679	D100701	D100735		
36	35	1680	D100800	D100736		
36	36	1681	D100806	D100831		
36	37	1682	D100805	D100832		
36	38	1683	D100804	D100833		
36	39	1684	D100803	D100834		
36	40	1685	D100802	D100835		
36	41	1686	D100901	D100936		
36	42	1687	D100906	D100931		
36	43	1688	D100905	D100932		
36	44	1689	D100904	D100933		
36	45	1690	D100902	D100935		
37	27	1719	D100611	D100614		
37	28	1720	D100612	D100613		
37	29	1721	D100707	D100718		
37	30	1722	D100708	D100717		
37	31	1723	D100709	D100716		
37	32	1724	D100710	D100715		
37	33	1725	D100711	D100714		
37	34	1726	D100712	D100713		
37	35	1727	D100700			
37	36	1728	D100807			
37	37	1729	D100808			
37	38	1730	D100809			
37	39	1731	D100810			
37	44	1736	D100909			
37	45	1737	D100910			
38	30	1769	D100720			
38	31	1770	D100721			
38	32	1771	D100722			
38	33	1772	D100723			

PINAL AMA MODEL GRID IN RELATION TO TOWNSHIP-RANGE-SECTION

Model Row	Model Column	Model Cell	Cadastral Location #1	Cadastral Location #2	Cadastral Location #3	Cadastral Location #4
38	34	1773	D100724			
38	35	1774	D100700			
38	36	1775	D100819			
38	37	1776	D100820			
38	38	1777	D100821			
38	39	1778	D100822			
38	40	1779	D100823			
38	41	1780	D100824			
38	42	1781	D100919			
38	43	1782	D100920			
38	44	1783	D100921	D100922		
38	45	1784	D100923			
38	46	1785	D100924			
*** Total ***						
		*****				

APPENDIX 3

MODEL LAYER THICKNESS ARRAYS

COLUMN

ROW	1									10										20										30										40							47
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	135	135	265	305	330	540	460	355	250	145	120	130	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	280	364	559	434	360	0
	0	140	130	225	275	310	350	555	450	355	225	165	160	170	190	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	219	234	219	234	0	0	0	0	0	0	270	280	290	270	170	100
	0	125	70	135	245	285	325	355	450	485	340	235	290	310	324	334	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	239	234	234	229	209	0	0	0	240	225	210	240	225	200	225	155
	0	115	110	200	265	360	350	435	500	495	450	375	355	344	319	314	329	0	0	0	0	0	0	0	0	0	0	0	0	0	0	234	219	229	244	244	279	0	214	219	194	200	200	190	185	230	275
	0	103	210	270	340	405	400	425	500	510	410	310	305	305	234	294	234	0	0	0	0	0	0	0	0	0	0	0	0	0	249	235	210	165	180	200	210	0	194	194	195	190	245	255	265	300	335
	0	183	324	355	400	415	490	350	450	410	325	270	205	175	149	149	0	0	0	0	0	0	0	0	0	0	0	0	0	0	225	205	175	190	195	185	190	195	195	205	215	215	205	240	270	305	360
	0	219	354	400	435	430	415	350	375	350	335	280	235	160	150	169	164	0	0	0	0	0	0	0	0	0	0	0	0	0	205	190	195	210	215	220	200	190	200	200	195	195	185	225	275	315	330
	0	0	324	414	450	445	440	400	375	340	335	320	290	250	240	260	274	0	0	0	0	0	0	0	0	0	0	0	0	0	190	200	210	235	235	235	230	220	215	205	190	185	195	220	255	305	335
10	0	0	0	334	450	440	440	330	375	330	350	345	350	370	380	320	174	154	114	0	0	0	0	119	124	149	274	289	0	0	220	215	235	245	250	245	250	245	235	210	195	165	175	200	200	250	355
	0	0	303	333	455	445	445	400	475	340	295	280	260	255	320	320	199	174	149	114	0	0	99	99	259	264	334	359	0	0	245	240	255	270	275	270	270	260	245	220	195	185	175	170	165	160	200
	0	0	353	414	455	450	450	435	335	320	305	290	270	250	235	230	204	174	174	190	220	175	180	185	205	274	319	344	0	0	270	265	280	285	295	295	285	270	250	235	210	200	195	175	180	150	200
	0	333	374	413	455	475	465	445	370	310	290	270	275	250	235	230	234	209	204	179	165	140	140	114	209	254	299	305	310	0	295	290	305	310	325	320	305	280	260	260	260	260	250	270	245	210	240
	0	354	400	404	440	430	450	405	340	330	320	285	270	260	245	240	269	224	194	174	104	73	84	134	184	234	289	265	285	300	310	325	320	335	340	340	325	300	290	310	310	290	295	315	300	245	264
	0	224	425	414	413	470	505	355	305	310	300	300	300	280	270	255	284	254	224	184	144	114	89	144	179	234	230	245	265	280	295	305	325	345	350	355	345	330	325	355	385	385	330	340	330	230	229
	0	0	293	424	334	330	440	350	235	300	310	305	300	290	265	250	279	244	214	179	149	139	99	149	184	205	230	250	265	280	295	315	330	345	355	360	360	355	360	375	400	430	375	365	350	295	334
	0	0	350	300	265	240	265	245	240	245	250	295	285	275	260	240	254	234	194	144	139	124	104	144	204	220	235	250	265	290	305	320	325	340	370	385	395	400	395	410	430	435	415	410	385	299	339
	0	0	0	0	0	0	303	250	245	245	255	280	260	250	240	235	229	209	184	159	134	124	109	139	204	220	235	255	270	290	300	320	345	350	390	410	420	435	420	425	450	450	430	440	395	284	0
	0	0	0	0	350	315	285	293	275	260	250	245	240	235	235	245	224	209	189	164	134	104	89	99	159	220	240	260	275	290	310	325	355	365	405	440	455	465	460	460	460	465	450	435	410	0	0
20	0	0	0	0	400	315	285	303	233	280	260	240	230	220	250	229	219	209	194	179	149	94	99	109	114	129	133	250	280	305	325	345	365	410	460	490	500	505	485	485	485	475	465	415	410	0	0
	0	0	0	0	400	325	285	270	253	234	334	274	239	239	219	219	219	209	199	194	159	139	139	144	149	174	0	0	290	320	335	0	400	445	490	535	545	550	535	525	535	525	455	420	415	0	0
	0	0	0	0	0	0	330	250	295	300	273	284	229	239	209	214	214	204	204	199	179	179	169	184	209	219	0	0	275	315	335	375	420	465	500	570	585	600	585	585	580	575	570	465	460	0	0
	0	0	0	0	0	0	0	255	260	259	284	249	224	199	169	189	194	204	199	199	169	174	184	220	229	254	0	0	285	325	340	400	435	475	515	595	625	640	655	670	655	640	620	500	430	0	0
	0	0	0	0	0	0	0	265	265	259	243	234	224	184	169	169	179	184	189	189	184	184	204	219	249	334	285	0	305	345	380	420	455	490	535	620	720	780	785	805	795	790	695	510	495	0	0
	0	0	0	0	0	0	0	0	0	0	0	223	224	133	179	184	184	189	194	159	0	184	189	245	269	294	320	340	350	375	395	440	485	515	585	670	775	850	900	915	925	885	790	470	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	219	239	169	184	179	184	189	209	224	189	204	260	304	310	330	355	370	405	420	480	525	610	735	810	910	875	1000	1020	990	905	830	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	214	199	183	184	189	199	214	229	134	0	275	374	330	355	375	400	415	530	595	750	855	920	985	1060	1030	1105	1130	1070	930	840	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	164	154	139	134	139	149	174	199	0	0	0	369	340	370	400	510	525	685	860	940	1010	1070	1120	1185	1200	1200	1190	1125	955	860	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	115	125	160	180	0	0	129	240	310	350	330	405	475	610	845	960	1065	1120	1180	1205	1215	1200	1210	1210	1130	945	865	0	0	0	0
30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	209	240	309	350	385	425	510	695	950	1070	1145	1190	1200	1190	1190	1180	1190	1165	1100	955	885	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	164	214	254	339	400	435	540	805	1065	1095	1150	1170	1170	1175	1175	1165	1165	1150	1045	935	905	649	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	145	184	279	364	405	550	870	1100	1125	1145	1150	1150	1150	1155	1150	1145	1175	975	945	920	669	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	333	400	540	850	1030	1105	1120	1135	1135	1035	1110	1115	1055	995	980	950	924	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	515	680	830	990	900	975	1015	995	995	985	925	830	790	710	624	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	510	550	575	600	655	685	755	840	855	820	760	740	740	789	645	594	564	531	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	334	434	469	535	565	585	590	605	645	665	665	615	609	649	669	589	539	524	514	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	284	339	369	389	499	514	619	634	549	569	489	484	489	499	499	509	504	504	509	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	334	369	424	429	434	459	454	449	459	449	0	0	0	0	489	464	0	0
39	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

MODEL LAYER THICKNESS
LAYER 1
UNITS = FEET

COLUMN

ROW

	1								10									20									30									40						47
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	600	1005	2135	2895	2970	2660	1140	945	950	855	780	650	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	246	136	101	166	101	0
	0	500	1070	2135	3175	3420	3320	2645	1810	1310	1075	870	730	530	430	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	181	166	181	166	0	0	0	0	0	0	206	271	310	350	310	150
	0	400	1070	2215	3225	3480	3540	3310	2180	1440	840	690	500	400	201	101	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	261	221	141	111	101	0	0	0	101	165	210	271	321	430	350	245
	0	200	980	1980	3110	3360	3580	3430	2300	1490	740	620	450	381	226	176	101	0	0	0	0	0	0	0	0	0	0	0	0	0	0	566	381	326	226	131	101	0	101	101	106	176	241	285	390	470	325
	0	151	730	1730	2750	3230	3530	3560	2700	1730	790	700	510	430	226	101	101	0	0	0	0	0	0	0	0	0	0	0	0	0	551	615	640	635	420	300	190	0	101	106	140	190	205	260	810	770	265
	0	136	501	1030	2410	2930	3440	3810	3500	2300	1090	750	620	470	376	251	0	0	0	0	0	0	0	0	0	0	0	0	0	0	101	395	675	660	655	615	430	250	155	210	285	385	495	740	980	935	340
	0	151	491	1040	2145	2680	3250	3810	3625	2760	1380	840	690	590	390	131	101	0	0	0	0	0	0	0	0	0	0	0	0	0	270	540	680	720	750	780	600	460	460	470	580	605	815	965	1050	960	360
	0	0	451	851	2040	2320	2570	3510	3625	3180	1490	910	650	500	350	220	101	0	0	0	0	0	0	0	0	0	0	0	0	0	360	580	720	750	855	820	785	750	810	780	760	830	890	1040	985	880	215
10	0	0	0	781	2001	2140	2680	3320	3490	3370	1880	3655	690	490	310	210	201	101	101	0	0	0	0	181	276	351	326	111	0	0	390	580	800	940	990	1005	1015	1030	1050	1090	1070	1100	1120	1075	1050	850	245
	0	0	378	751	1645	2055	2380	2390	3320	3230	2305	1120	990	710	460	350	301	276	251	186	0	0	201	701	741	736	666	241	0	0	390	750	935	1280	1420	1380	1340	1280	1270	1280	1275	1290	1245	1165	1100	840	400
	0	0	471	741	1420	2040	2240	2745	3140	3120	2940	2265	3730	815	640	570	398	376	376	310	230	225	520	1015	1395	1326	981	656	0	0	320	830	1015	1460	1705	1810	1815	1830	1850	1765	1630	1600	1405	1260	1030	745	400
	0	151	476	701	1045	2015	2135	2535	2920	3050	2865	2690	1725	970	840	660	466	441	446	471	435	560	660	1286	1591	1546	1301	895	125	0	320	810	1295	2094	2089	2495	2510	2540	2169	2140	2040	1940	1750	1530	1030	655	360
	0	146	370	536	820	1610	2030	2450	2820	2835	2750	2585	2005	1320	955	850	736	651	616	576	646	621	666	1066	1616	1766	1511	1135	515	300	490	1275	1680	2065	2460	2860	3075	3129	3149	2390	2290	2310	1905	1685	1035	650	336
	0	116	175	451	771	3530	2165	2440	2640	2660	2575	2445	2235	1760	1275	945	816	646	676	716	756	786	661	606	1621	1966	1770	1555	935	920	1405	1495	2075	2455	2650	3245	3655	3670	3075	2845	2715	2615	2270	1660	970	580	301
	0	0	101	216	481	880	1355	2285	2495	2480	2375	2245	2165	1905	1535	1060	921	756	786	821	851	761	751	601	1016	1595	1770	1550	1335	1320	1605	1885	2105	2455	2845	3340	3640	3645	3640	3625	3400	2390	2650	1735	850	320	206
	0	0	50	100	235	650	1150	1880	2225	2305	2240	2160	2110	1925	1550	1160	1046	966	906	956	861	826	796	656	996	1380	1565	1450	1335	1310	1595	1880	2275	2560	3030	3415	3605	3600	3605	3590	3570	3010	2675	1820	825	201	101
	0	0	0	0	0	0	601	1120	1855	2200	2180	2140	2100	1810	1575	1340	1071	991	1016	941	866	826	791	711	795	1080	1365	1145	930	1110	1000	1880	2055	2450	2810	3460	3580	3565	3580	3575	3550	3070	2760	1860	820	151	0
	0	0	0	0	50	55	650	951	1150	1640	2050	2095	1875	1680	1490	1240	1076	991	1011	936	866	846	811	701	641	680	860	740	825	910	1090	1375	1745	2335	2695	3260	3545	3535	3540	3540	3540	3160	2740	2055	810	0	0
20	0	0	0	0	100	235	450	851	1001	1220	1540	1700	1645	1460	1285	1171	1081	991	906	821	751	756	301	591	586	471	467	350	520	695	675	855	1535	1990	2540	3510	3500	3495	3515	3515	3515	3440	2720	2050	705	0	0
	0	0	0	0	100	275	315	630	1031	1006	1036	1226	1121	1101	1081	931	981	891	901	806	741	711	611	456	351	226	0	0	310	380	365	0	1400	1955	2510	3465	3455	3450	3465	3475	3465	3095	2725	2045	600	0	0
	0	0	0	0	0	0	0	310	705	800	921	1036	1071	991	991	886	786	796	796	801	821	771	631	516	341	181	0	0	265	300	365	710	1180	1935	2700	3430	3415	3400	3415	3415	3420	3425	2680	1830	475	0	0
	0	0	0	0	0	0	0	245	540	741	816	851	976	1001	911	811	706	696	701	751	761	776	716	630	471	296	0	0	265	375	660	800	1465	2425	3250	3405	3375	3360	3345	3330	3345	3360	2580	3500	310	0	0
	0	0	0	0	0	0	0	235	335	341	551	766	776	816	831	681	571	516	511	511	566	616	646	631	551	266	280	0	360	550	720	1080	2345	3080	3390	3380	3280	3220	3215	3195	3205	3210	2005	1000	300	0	0
	0	0	0	0	0	0	0	0	0	0	0	361	576	601	621	516	466	461	456	491	0	516	561	605	581	506	380	360	450	725	1005	1860	3140	3415	3415	3330	3225	3150	3100	3085	3075	3115	1310	300	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	181	391	411	466	471	416	411	391	326	411	496	590	596	690	770	845	930	995	1180	2320	3410	3390	3265	3190	3090	3125	3000	2980	3010	3095	1800	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	266	351	411	366	361	351	336	271	316	0	495	526	770	945	1025	1100	1185	1870	2605	3250	3145	3080	3015	2940	2920	2895	2870	2930	3070	1700	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	251	346	361	366	361	351	326	251	0	0	0	481	660	780	900	1040	1575	2315	2610	3060	2990	2930	2880	2815	2800	2800	2810	2875	3030	3140	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	285	325	340	270	0	0	251	360	590	750	810	1495	1125	1790	2355	2495	2935	2880	2820	2795	2785	2800	2790	2790	2870	1455	1150	0	0	0	0
30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	351	560	641	750	715	875	990	1405	1950	2395	2855	2810	2800	2810	2810	2820	2810	2835	2900	1060	3115	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	436	636	646	561	500	665	860	1195	1335	1805	2850	2830	2830	2825	2825	2835	2835	2595	1770	1500	700	101	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	655	616	521	336	395	650	530	1400	1875	2855	2850	2850	2850	2845	2850	2855	2585	1700	1350	400	101	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	251	400	560	1250	1710	2390	2880	2865	2865	2965	2890	2785	2100	1575	1050	650	151	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	585	2020	2330	2430	2800	2690	2460	2350	2290	1380	1000	850	700	490	101	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	170	650	2410	2500	2590	2630	2530	2350	2265	1850	970	850	710	621	525	286	201	176	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	101	166	331	2160	2340	2430	2450	2430	2300	2195	1735	1125	901	721	561	551	511	401	656	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	216	261	331	1211	2001	2001	2001	2001	2001	2001	2001	1516	751	251	351	351	261	426	791	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2001	2001	2001	2001	2001	2001	2001	2001	1776	801	0	0	0	0	201	236	0	0
39	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

MODEL LAYER THICKNESS
LAYER 2
UNITS = FEET

APPENDIX 4

DISTRIBUTION OF VCONT

COLUMN

ROW	1									10										20										30										40							47
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	5	5	5	5	5	5	5	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2743	3267	2203	4357	0
	0	0	0	5	5	5	5	5	5	5	5	5	5	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3539	3862	2561	2883	0	0	0	0	0	0	0	0	0	1343	2638	0
	0	0	0	0	5	5	5	5	5	5	5	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2083	2662	5843	7687	7171	0	0	0	5225	0	0	0	0	0	293	356
	0	0	0	5	5	5	5	5	5	5	5	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	502	980	1351	2405	5869	9600	0	4645	5028	3029	0	0	0	211	191	182
	0	0	5	5	5	5	5	5	5	5	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	569	450	374	318	605	1145	2239	0	4688	4469	1978	983	1128	718	83	107	914
	0	0	0	5	5	5	5	5	5	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8610	833	298	317	331	304	504	1343	2445	1101	550	291	168	81	53	58	433
	0	0	0	5	5	5	5	5	5	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1168	372	273	258	247	192	249	228	179	175	118	99	48	31	38	31	121
	0	0	0	0	5	5	5	5	5	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	723	321	258	247	174	181	143	100	55	58	59	38	34	22	0	25	450
10	0	0	0	0	0	5	5	5	5	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	628	384	232	197	150	148	110	72	38	27	28	0	0	0	0	0	0
	0	0	0	0	0	0	5	5	5	5	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	759	248	199	116	105	81	83	58	29	23	18	0	0	0	0	0	0
	0	0	0	0	0	0	5	5	5	5	5	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1194	162	117	51	44	37	25	20	12	13	9	5	0	0	0	0	0
	0	0	0	0	0	0	5	5	5	5	5	5	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	962	165	58	25	25	18	12	12	10	14	7	8	4	0	0	0	0
	0	0	0	0	0	0	5	5	5	5	5	5	5	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	908	361	59	31	22	15	10	7	7	5	6	7	3	4	9	14	0	0
	0	0	0	0	0	0	5	5	5	5	5	5	0	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	97	32	30	18	12	11	7	6	4	5	5	6	8	3	14	33	0	0
	0	0	0	0	0	0	0	5	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	45	19	12	11	6	5	4	4	4	4	2	4	5	8	13	53	303	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	45	51	14	12	10	8	5	4	2	2	2	4	4	5	8	18	72	884	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	65	104	67	60	12	11	8	5	4	4	4	4	4	4	5	8	15	91	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	182	163	139	75	22	13	6	6	5	4	4	4	4	4	5	8	15	101	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	790	401	245	284	87	29	15	6	4	4	4	4	4	4	4	11	18	137	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	115	85	82	0	43	15	9	4	4	4	4	4	4	7	11	18	198	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	147	133	84	21	57	15	8	4	4	4	4	4	4	7	14	24	340	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	149	90	21	16	31	9	5	4	4	7	7	7	7	7	14	19	829	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	114	0	90	44	15	8	13	7	4	4	7	7	7	7	7	12	30	69	919	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	21	26	37	73	102	58	20	7	2	7	4	4	7	7	9	10	10	10	14	73	945	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24	29	22	19	14	10	8	4	1	4	4	7	7	10	10	10	12	10	14	49	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	35	54	18	13	10	7	4	2	9	7	9	10	10	13	13	13	13	13	15	52	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	62	26	21	14	11	3	1	14	10	12	13	13	16	16	16	16	13	17	57	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	29	24	13	13	4	5	2	2	15	13	13	16	16	16	16	16	16	13	71	121	0	0	0	0
30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	21	12	13	9	9	7	7	4	3	18	13	16	16	16	16	13	16	13	13	103	57	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	16	19	12	9	6	6	32	13	16	16	13	13	13	13	17	33	49	215	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14	45	29	15	27	6	31	13	13	13	13	13	13	13	17	31	65	619	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	89	44	20	5	4	19	13	13	13	13	13	13	25	37	110	332	4117	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18	2	2	18	11	14	18	19	19	48	87	145	247	526	8670	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	238	12	1	1	9	9	12	16	16	32	121	155	225	310	417	1400	3157	3598	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	518	232	50	1	1	9	9	9	13	17	34	86	132	255	439	338	518	734	279	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	112	83	37	4	2	11	15	15	26	26	22	34	158	1582	837	866	1701	691	205	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	11	11	15	19	22	22	25	121	0	0	0	0	2834	2024	0	0
39	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

DISTRIBUTION OF VCONT
PINAL AMA MODEL

UNITS = 1/VALUE $\times$(2.3$\times$10−12) SECONDS

APPENDIX 5

WATER LEVEL ARRAYS - TRANSIENT AND STEADY-STATE

COLUMN

ROW	1									10										20										30										40							47
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	1110	1100	1104	1105	1107	1108	1110	1111	1115	1120	1125	1136	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1405	1405	1420	1430	1440	0
	0	1122	1119	1117	1115	1115	1115	1118	1119	1120	1125	1130	1138	1140	1145	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1315	1320	1325	1330	0	0	0	0	0	0	1405	1405	1420	1430	1460	1475
	0	1127	1125	1123	1122	1120	1120	1123	1125	1127	1130	1135	1142	1145	1150	1155	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1320	1325	1330	1340	1350	0	0	0	1395	1405	1410	1415	1425	1430	1460	1475
	0	1130	1130	1130	1128	1128	1128	1129	1130	1135	1137	1140	1145	1150	1155	1160	1165	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1325	1330	1340	1345	1355	1360	0	1385	1395	1405	1415	1420	1430	1435	1455	1470
	0	1143	1138	1136	1135	1134	1134	1135	1137	1140	1148	1149	1150	1155	1160	1160	1165	0	0	0	0	0	0	0	0	0	0	0	0	0	1320	1330	1335	1340	1345	1350	1360	0	1385	1395	1405	1415	1420	1430	1445	1455	1470
	0	1145	1143	1142	1140	1140	1140	1140	1140	1145	1145	1150	1155	1160	1165	1165	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1330	1335	1340	1345	1350	1355	1365	1375	1385	1395	1405	1415	1420	1435	1445	1455	1468
	0	1145	1145	1145	1145	1145	1145	1145	1145	1150	1150	1155	1160	1160	1170	1175	1180	0	0	0	0	0	0	0	0	0	0	0	0	0	1335	1340	1345	1350	1355	1360	1370	1375	1385	1395	1405	1415	1420	1430	1445	1455	1465
	0	0	1150	1150	1150	1150	1150	1150	1150	1155	1155	1160	1165	1170	1175	1180	1185	0	0	0	0	0	0	0	0	0	0	0	0	0	1340	1345	1350	1355	1360	1365	1370	1375	1385	1395	1405	1415	1420	1435	1445	1455	1465
10	0	0	0	1150	1150	1150	1150	1155	1155	1155	1160	1165	1170	1175	1180	1185	1190	1200	1205	0	0	0	0	1335	1340	1350	1355	1355	0	0	1350	1355	1355	1360	1365	1370	1375	1380	1385	1395	1405	1415	1420	1435	1445	1455	1465
	0	0	1155	1155	1155	1155	1155	1160	1160	1165	1165	1170	1175	1180	1185	1190	1200	1205	1210	1220	0	0	1330	1335	1345	1350	1355	1360	0	0	1355	1360	1365	1365	1370	1370	1375	1385	1390	1400	1405	1415	1425	1435	1445	1455	1465
	0	0	1150	1150	1150	1150	1150	1165	1165	1165	1170	1175	1180	1185	1190	1200	1205	1210	1220	1240	1250	1310	1330	1335	1345	1350	1355	1360	0	0	1360	1365	1370	1370	1375	1375	1380	1390	1395	1400	1405	1415	1425	1435	1445	1455	1465
	0	1160	1160	1160	1160	1160	1165	1170	1170	1170	1175	1175	1185	1190	1195	1200	1210	1220	1230	1250	1270	1310	1330	1335	1350	1355	1360	1365	1370	0	1365	1370	1375	1375	1380	1385	1390	1395	1400	1405	1415	1420	1425	1440	1445	1455	1465
	0	1165	1165	1165	1165	1170	1170	1170	1170	1175	1175	1180	1185	1195	1200	1205	1215	1225	1240	1260	1290	1310	1335	1340	1350	1355	1365	1370	1370	1375	1375	1380	1380	1385	1385	1390	1395	1400	1405	1410	1420	1425	1430	1440	1445	1455	1465
	0	1170	1170	1170	1175	1175	1175	1175	1175	1175	1180	1190	1195	1200	1205	1210	1220	1230	1250	1270	1290	1310	1340	1345	1350	1360	1365	1365	1375	1375	1380	1385	1390	1390	1395	1395	1400	1405	1410	1415	1425	1430	1435	1445	1450	1455	1465
	0	0	1175	1175	1175	1175	1175	1180	1180	1185	1190	1195	1200	1205	1210	1215	1225	1235	1250	1270	1290	1310	1340	1345	1350	1360	1365	1370	1375	1385	1385	1390	1395	1395	1400	1405	1410	1415	1415	1425	1430	1435	1440	1445	1455	1455	1465
	0	0	1180	1180	1185	1185	1185	1185	1185	1190	1195	1200	1205	1210	1215	1220	1230	1240	1250	1270	1290	1310	1340	1345	1355	1365	1370	1375	1385	1390	1395	1395	1400	1405	1410	1415	1415	1420	1425	1430	1435	1440	1445	1450	1455	1460	1470
	0	0	0	0	0	0	1190	1190	1190	1195	1200	1205	1210	1215	1220	1225	1235	1240	1250	1270	1290	1310	1335	1350	1360	1365	1375	1380	1385	1395	1395	1400	1405	1415	1415	1420	1425	1430	1435	1440	1445	1445	1450	1455	1460	1465	0
	0	0	0	0	1190	1190	1190	1195	1200	1200	1205	1210	1215	1220	1225	1230	1235	1245	1255	1270	1285	1310	1330	1350	1360	1370	1380	1385	1390	1395	1400	1405	1415	1420	1425	1430	1435	1440	1445	1445	1450	1450	1455	1460	1465	0	0
20	0	0	0	0	1195	1195	1195	1200	1205	1205	1210	1215	1220	1225	1230	1235	1240	1245	1260	1270	1285	1310	1335	1355	1365	1375	1385	1390	1395	1405	1405	1415	1425	1430	1435	1440	1445	1445	1450	1455	1455	1455	1460	1465	1465	0	0
	0	0	0	0	1200	1200	1200	1205	1210	1210	1215	1220	1225	1230	1235	1240	1245	1250	1260	1275	1290	1315	1340	1360	1370	1380	0	0	1405	1410	1415	0	1430	1435	1440	1445	1450	1455	1455	1460	1465	1465	1465	1470	1470	0	0
	0	0	0	0	0	0	1210	1215	1215	1220	1225	1230	1235	1240	1240	1245	1250	1260	1270	1280	1300	1330	1360	1370	1380	1390	0	0	1410	1415	1425	1430	1440	1445	1445	1450	1455	1460	1465	1465	1470	1470	1470	1475	1475	0	0
	0	0	0	0	0	0	0	1220	1225	1225	1230	1235	1240	1245	1250	1255	1260	1270	1280	1290	1320	1340	1370	1380	1385	1395	0	0	1415	1425	1430	1440	1445	1450	1455	1460	1465	1470	1470	1475	1475	1475	1475	1480	1480	0	0
	0	0	0	0	0	0	0	1230	1230	1235	1240	1240	1245	1250	1255	1260	1270	1275	1285	1300	1320	1350	1380	1385	1395	1400	1405	0	1425	1430	1440	1445	1450	1460	1465	1470	1475	1475	1480	1480	1480	1485	1485	1485	1485	0	0
	0	0	0	0	0	0	0	0	0	0	0	1245	1250	1260	1265	1270	1275	1280	1290	1310	0	1360	1380	1390	1400	1405	1415	1425	1435	1440	1445	1455	1460	1465	1470	1475	1480	1485	1485	1485	1485	1490	1490	1490	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	1260	1265	1270	1275	1280	1290	1300	1320	1340	1360	1390	1400	1405	1415	1425	1430	1440	1445	1455	1460	1465	1475	1480	1485	1485	1485	1490	1490	1495	1495	1495	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	1275	1280	1285	1290	1295	1300	1320	1340	1360	0	1405	1415	1420	1430	1440	1445	1450	1460	1465	1475	1480	1485	1485	1490	1495	1495	1495	1500	1500	1500	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	1280	1285	1290	1295	1300	1310	1330	1340	0	0	0	1420	1430	1435	1445	1450	1460	1465	1475	1480	1485	1490	1495	1495	1500	1500	1505	1505	1505	1510	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1300	1310	1320	1330	0	0	1415	1420	1430	1435	1440	1450	1455	1465	1475	1480	1485	1490	1495	1500	1505	1505	1505	1510	1515	1515	1520	0	0	0	0
30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1420	1430	1435	1440	1450	1455	1460	1470	1475	1485	1490	1495	1505	1505	1510	1510	1515	1515	1520	1525	1530	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1425	1430	1440	1445	1455	1455	1465	1475	1485	1490	1495	1505	1510	1515	1515	1520	1520	1525	1530	1535	1540	1555	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1435	1440	1450	1455	1460	1470	1480	1485	1495	1500	1505	1515	1520	1525	1525	1530	1535	1540	1545	1550	1560	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1460	1475	1480	1485	1495	1500	1505	1515	1520	1525	1530	1535	1540	1545	1550	1560	1570	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1490	1495	1500	1510	1515	1525	1530	1535	1540	1545	1555	1560	1565	1575	1580	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1495	1500	1505	1515	1520	1525	1530	1535	1545	1550	1555	1565	1575	1580	1595	1605	1630	1650	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1500	1505	1510	1515	1520	1525	1530	1540	1545	1550	1560	1570	1580	1590	1600	1610	1625	1645	1665	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1505	1510	1515	1520	1525	1530	1535	1545	1555	1560	1570	1580	1595	1605	1615	1630	1643	1660	1680	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1530	1535	1540	1545	1555	1565	1570	1580	1590	1605	0	0	0	0	1675	1690	0	0
39	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

STEADY-STATE: STARTING WATER LEVELS

LAYERS 1 & 2

UNITS =(FEET)

COLUMN

ROW	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	1040	1040	1030	1030	1025	1020	1020	1025	1025	1055	1055	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1210	1240	1240	1245	1275	0
3	0	0	1050	1065	1010	1005	1005	1010	1010	1005	1020	1055	1060	1050	1050	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1175	1185	1190	1195	0	0	0	0	0	0	1250	1255	1260	1285	1350	1400
4	0	0	995	990	990	990	995	1005	1005	990	1025	1055	1050	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1180	1185	1190	1200	1210	0	0	0	1270	1265	1265	1265	1280	1305	1350	1400
5	0	0	995	990	985	985	990	1000	1000	985	1000	1010	1000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1185	1190	1190	1200	1205	1210	0	1235	1280	1230	1280	1280	1230	1310	1350	1330
6	0	0	1000	990	980	980	990	990	990	985	990	990	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1195	1200	1245	1245	1245	1245	1245	0	1290	1295	1295	1295	1235	1305	1310	1340	1350
7	0	0	0	995	990	980	990	980	990	980	980	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1235	1240	1245	1255	1255	1245	1245	1275	1310	1310	1310	1310	1305	1305	1300	1315	1325
8	0	0	0	1000	1000	995	990	980	980	980	990	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1230	1235	1245	1255	1260	1270	1250	1305	1310	1315	1315	1310	1300	1290	1290	1295	1300
9	0	0	0	0	1000	985	990	985	985	985	1010	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1225	1235	1245	1260	1270	1280	1295	1310	1315	1310	1300	1300	1305	1295	1285	1290	1295
10	0	0	0	0	0	1000	1000	990	990	990	1015	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1220	1235	1245	1260	1270	1285	1300	1310	1300	1300	1305	1310	0	0	0	0	0
11	0	0	0	0	0	0	1010	1000	995	995	1015	1030	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1200	1220	1240	1260	1270	1280	1295	1300	1295	1290	1295	1305	1325	1325	0	0	0
12	0	0	0	0	0	0	1020	1015	1010	1010	1015	1030	1035	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1190	1200	1225	1240	1260	1270	1280	1290	1295	1300	1300	1305	1325	1325	0	0	0
13	0	0	0	0	0	0	1050	1040	1030	1020	1025	1035	1040	1045	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1180	1200	1220	1235	1255	1265	1280	1290	1300	1305	1300	1290	1295	1325	0	0	0
14	0	0	0	0	0	0	1060	1055	1040	1035	1040	1050	1055	1050	1050	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1175	1210	1220	1230	1240	1245	1250	1260	1280	1295	1305	1300	1290	1290	1290	1295	0	0
15	0	0	0	0	0	0	1065	1060	1055	1055	1060	1065	0	1055	1040	0	0	0	0	0	0	0	0	0	0	0	0	0	1125	1175	1210	1220	1230	1235	1240	1240	1250	1270	1295	1305	1300	1290	1285	1285	1295	1330	1335
16	0	0	0	0	0	0	0	1070	1070	1070	0	0	0	0	1040	0	0	0	0	0	0	0	0	0	0	0	0	0	1130	1175	1220	1240	1240	1240	1240	1240	1245	1275	1305	1310	1305	1290	1290	1290	1295	1330	1335
17	0	0	0	0	0	0	0	1085	1085	0	0	0	0	0	1050	0	0	0	0	0	0	0	0	0	0	0	0	1150	1190	1225	1250	1255	1255	1250	1245	1245	1250	1280	1310	1315	1310	1300	1295	1295	1320	1350	1410
18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1210	1235	1255	1260	1265	1260	1255	1245	1240	1260	1285	1305	1310	1315	1310	1305	1310	1310	1360	0
19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1215	1250	1255	1260	1265	1260	1255	1240	1245	1270	1290	1305	1310	1315	1315	1310	1310	1310	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1195	1205	1255	1260	1265	1260	1255	1230	1255	1275	1290	1300	1305	1305	1305	1305	1305	1305	0	0
21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1200	1225	1255	0	1255	1240	1225	1240	1250	1275	1280	1290	1290	1290	1295	1295	1295	0	0
22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1260	1260	1260	1260	1250	1235	1230	1235	1240	1255	1260	1265	1275	1280	1280	1280	1280	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1275	1270	1270	1260	1250	1240	1230	1230	1235	1240	1255	1260	1265	1265	1265	1265	1265	0	0
24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1300	0	1290	1290	1280	1265	1250	1240	1235	1230	1235	1240	1245	1255	1255	1260	1260	1260	1260	0	0
25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1285	1300	1310	1315	1310	1310	1300	1285	1265	1250	1240	1235	1220	1220	1215	1210	1235	1240	1250	1250	1250	0	0	0
26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1285	1295	1305	1315	1320	1315	1305	1290	1275	1255	1240	1235	1220	1210	1205	1190	1190	1205	1205	1225	0	0	0	0
27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1290	1290	1295	1305	1310	1320	1310	1300	1285	1260	1240	1225	1205	1195	1195	1185	1175	1175	1175	1175	0	0	0	0
28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1290	1295	1305	1315	1325	1315	1305	1290	1275	1255	1235	1200	1185	1205	1205	1175	1150	1140	1160	0	0	0	0
29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1280	1280	1300	1305	1315	1320	1315	1305	1300	1285	1265	1250	1215	1175	1170	1200	1150	1145	1150	1165	0	0	0	0
30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1285	1270	1300	1310	1315	1300	1295	1295	1290	1285	1275	1260	1245	1210	1150	1145	1140	1145	1155	1185	0	0	0	0
31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1280	1295	1310	1310	1305	1295	1290	1285	1280	1270	1260	1255	1235	1180	1150	1145	1145	1160	1130	1200	0	0	0
32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1290	1305	1310	1315	1305	1300	1295	1290	1280	1275	1265	1255	1175	1140	1145	1145	1160	1170	1200	0	0	0
33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1305	1310	1320	1310	1310	1305	1300	1290	1280	1265	1235	1150	1140	1145	1165	1175	1200	0	0	0	0
34	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1320	1315	1315	1320	1315	1320	1295	1280	1260	1180	1170	1165	1165	1175	1190	0	0	0	0
35	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1335	1330	1325	1330	1340	1355	1375	1360	1340	1280	1245	1195	1190	1195	1210	1250	1325	1410	0	0
36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1345	1340	1335	1340	1345	1350	1360	1390	1390	1365	1350	1250	1235	1235	1250	1275	1325	1390	1450	0	0
37	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1350	1345	1345	1345	1350	1375	1375	1375	1375	1375	1375	1375	1350	1350	1400	1440	1460	1475	1510	0	0
38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1375	1380	1380	1380	1380	1380	1380	1380	1380	1400	0	0	0	0	1540	1560	0	0
39	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TRANSIENT–STATE: STARTING WATER LEVELS
LAYER 1
UNITS = (FEET)

COLUMN

ROW	1									10										20										30										40							47
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	860	850	800	765	740	725	715	710	690	700	735	770	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1210	1240	1210	1245	1275	0
	0	845	725	700	635	690	685	680	665	675	695	735	770	810	840	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1175	1185	1190	1195	0	0	0	0	0	0	1250	1255	1260	1285	1350	1400
	0	860	725	630	675	670	680	655	660	670	695	730	790	825	840	870	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1180	1185	1190	1200	1210	0	0	0	1270	1265	1265	1265	1280	1305	1350	1400
	0	870	750	660	655	650	645	645	650	670	695	725	770	810	875	925	950	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1185	1190	1190	1200	1205	1210	0	1285	1280	1280	1280	1280	1290	1310	1335	1330
	0	870	725	675	645	645	640	640	645	650	690	720	740	800	875	920	950	0	0	0	0	0	0	0	0	0	0	0	0	0	1195	1200	1245	1245	1245	1240	1240	0	1290	1295	1295	1295	1295	1305	1310	1320	1350
	0	850	695	645	645	640	635	640	645	650	700	725	750	775	880	920	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1235	1240	1245	1255	1245	1245	1245	1275	1305	1310	1310	1305	1305	1300	1295	1295	1325
	0	850	690	645	645	640	635	640	645	650	700	735	775	800	850	925	950	0	0	0	0	0	0	0	0	0	0	0	0	0	1230	1235	1245	1255	1260	1270	1250	1300	1305	1310	1305	1300	1295	1290	1290	1290	1300
	0	0	700	645	640	635	635	640	645	650	700	730	720	750	810	875	950	0	0	0	0	0	0	0	0	0	0	0	0	0	1225	1235	1245	1260	1270	1280	1295	1305	1310	1310	1300	1295	1295	1290	1285	1290	1295
10	0	0	0	645	640	635	630	635	640	645	650	670	660	675	700	825	940	975	1010	0	0	0	0	1200	1150	1095	1080	1080	0	0	1220	1235	1245	1260	1270	1285	1295	1310	1300	1300	1305	1295	1290	1280	1270	1260	1270
	0	0	630	645	640	635	630	630	630	635	645	645	645	665	690	800	910	970	1005	1050	0	0	1185	1210	1150	1095	1085	1075	0	0	1200	1215	1225	1240	1260	1265	1275	1290	1295	1280	1295	1305	1295	1280	1265	1250	1245
	0	0	675	645	640	635	630	625	625	630	635	640	645	675	705	750	900	970	1000	1060	1120	1170	1190	1215	1150	1090	1080	1070	0	0	1140	1150	1195	1215	1225	1235	1240	1235	1245	1260	1295	1305	1285	1255	1240	1240	1240
	0	700	675	650	645	640	635	630	625	630	635	640	645	650	680	740	850	950	1010	1060	1125	1170	1190	1225	1160	1090	1080	1070	1080	0	1075	1100	1140	1175	1170	1175	1175	1185	1190	1200	1225	1250	1275	1275	1240	1240	1240
	0	700	675	660	645	640	635	630	630	635	640	645	650	675	690	725	840	940	1020	1085	1150	1175	1200	1200	1160	1090	1085	1085	1090	1110	1120	1110	1125	1145	1155	1160	1170	1175	1180	1185	1190	1205	1225	1245	1240	1240	1240
	0	700	630	670	650	645	640	635	635	640	645	650	670	690	705	735	800	910	1025	1100	1165	1185	1210	1220	1160	1100	1090	1090	1100	1115	1130	1115	1110	1125	1140	1155	1160	1165	1170	1175	1180	1190	1200	1220	1250	1220	1220
	0	0	750	700	675	650	645	640	635	640	645	650	665	680	705	730	800	900	1050	1140	1170	1185	1210	1210	1175	1125	1090	1090	1105	1120	1130	1115	1105	1120	1135	1145	1155	1160	1165	1170	1175	1180	1185	1190	1200	1200	1210
	0	0	775	750	700	675	645	640	635	640	640	645	660	675	695	725	775	960	1060	1150	1170	1185	1210	1205	1180	1150	1095	1100	1105	1115	1110	1105	1105	1115	1130	1140	1150	1155	1160	1165	1175	1180	1185	1190	1195	1195	1200
	0	0	0	0	0	0	655	645	640	635	640	645	650	675	690	725	775	875	1050	1140	1165	1185	1200	1210	1180	1165	1145	1135	1125	1115	1100	1110	1120	1125	1130	1140	1145	1150	1155	1160	1170	1175	1180	1185	1190	1190	0
	0	0	0	0	800	750	695	650	645	640	640	645	650	675	690	735	810	860	1000	1100	1150	1175	1190	1225	1175	1160	1130	1110	1100	1105	1110	1115	1120	1125	1130	1135	1140	1145	1150	1155	1160	1165	1170	1175	1180	0	0
20	0	0	0	0	850	800	740	675	650	645	645	650	665	685	700	775	850	880	950	1040	1125	1165	1180	1220	1190	1170	1130	1100	1160	1130	1125	1120	1115	1120	1125	1130	1135	1140	1145	1150	1155	1160	1165	1170	1175	0	0
	0	0	0	0	900	850	800	740	680	675	675	675	680	700	745	825	875	890	935	1000	1115	1160	1180	1200	1205	1175	0	0	1125	1130	1105	0	1105	1105	1110	1115	1120	1125	1130	1135	1140	1145	1150	1135	1155	0	0
	0	0	0	0	0	0	850	800	740	720	700	700	725	775	810	860	880	910	950	1000	1110	1185	1180	1195	1210	1160	0	0	1075	1090	1105	1110	1120	1130	1140	1150	1150	1150	1150	1150	1150	1150	1150	1150	1150	0	0
	0	0	0	0	0	0	0	850	840	815	800	850	840	860	910	925	920	935	975	1050	1125	1165	1180	1200	1200	1050	0	0	1050	1050	1080	1105	1120	1140	1150	1150	1150	1150	1150	1150	1150	1150	1150	1150	1150	0	0
	0	0	0	0	0	0	0	920	910	900	900	910	915	925	940	960	960	975	1010	1090	1140	1170	1190	1210	1180	1125	990	0	990	1020	1040	1075	1120	1140	1150	1150	1150	1150	1150	1150	1150	1150	1150	1150	1150	0	0
	0	0	0	0	0	0	0	0	0	0	0	925	940	945	960	975	990	1025	1050	1110	0	1175	1200	1210	1175	1125	990	980	980	990	1025	1070	1110	1040	1150	1150	1150	1150	1150	1150	1150	1150	1150	1150	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	950	960	975	1000	1025	1050	1075	1125	1150	1175	1200	1200	1175	1125	1005	1000	1000	1015	1030	1050	1100	1140	1150	1150	1150	1150	1150	1150	1150	1165	1180	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	1000	1020	1040	1050	1060	1080	1125	1150	1175	0	1210	1170	1110	1050	1040	1030	1030	1040	1050	1100	1150	1150	1150	1150	1150	1150	1150	1150	1150	1175	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	1020	1040	1050	1065	1080	1100	1125	1150	0	0	0	1210	1100	1060	1040	1030	1030	1040	1045	1100	1140	1150	1150	1150	1200	1200	1175	1100	1140	1140	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1065	1080	1100	1125	0	0	1220	1210	1175	1100	1060	1040	1035	1040	1045	1075	1130	1150	1150	1150	1150	1150	1150	1150	1145	1135	1125	0	0	0	0
30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1220	1210	1170	1125	1075	1040	1035	1035	1040	1045	1075	1130	1150	1150	1150	1150	1145	1140	1140	1125	1110	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1180	1160	1150	1125	1110	1045	1040	1040	1040	1040	1050	1110	1150	1150	1150	1150	1150	1145	1135	1115	1105	1110	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1210	1190	1175	1112	1100	1050	1045	1040	1040	1050	1100	1150	1150	1150	1140	1140	1145	1135	1120	1110	1100	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1150	1125	1075	1050	1045	1045	1055	1080	1120	1150	1150	1140	1140	1145	1145	1140	1140	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1110	1075	1075	1075	1075	1080	1110	1150	1150	1150	1160	1165	1165	1175	1190	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1150	1125	1120	1120	1120	1120	1125	1150	1175	1175	1175	1195	1190	1195	1210	1250	1325	1410	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1345	1340	1335	1300	1300	1275	1275	1275	1275	1250	1250	1250	1235	1235	1250	1275	1325	1390	1450	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1350	1345	1345	1345	1350	1375	1375	1375	1375	1375	1375	1375	1350	1350	1400	1440	1460	1475	1510	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1375	1380	1380	1380	1380	1380	1380	1380	1380	1400	0	0	0	0	1540	1560	0	0
39	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TRANSIENT–STATE: STARTING WATER LEVELS
LAYER 2
UNITS = (FEET)

APPENDIX 6

ANNUAL PUMPAGE PER CADASTRAL LOCATION

PINAL AMA MODEL PUMPAGE
1985-1988
Ac-Ft

Model Row	Model Column	Model Cell	Cadastral Location #1	Cadastral Location #2	1985	1986	1987	1988
2	2	49	D040203	D040204	0	0	0	0
2	3	50	D040202	D040211	0	0	0	0
2	4	51	D040201	D040212	0	0	0	0
2	5	52	D040306	D040307	0	0	0	0
2	6	53	D040305	D040308	0	0	0	0
2	7	54	D040304	D040309	0	0	0	0
2	8	55	D040303	D040310	0	0	0	0
2	9	56	D040302	D040311	0	0	0	0
2	10	57	D040301	D040312	0	0	0	0
2	11	58	D040406	D040407	0	0	0	0
2	12	59	D040405	D040408	0	0	0	0
2	13	60	D040404	D040409	0	0	0	0
3	2	96	D040215	D040216	0	0	0	0
3	3	97	D040214		2319	1350	2324	1934
3	4	98	D040213		1557	1829	2023	1255
3	5	99	D040318		519	719	918	673
3	6	100	D040317		1022	568	961	390
3	7	101	D040316		725	784	861	664
3	8	102	D040315		1305	931	2163	1711
3	9	103	D040314		963	610	852	687
3	10	104	D040313		1998	2283	2278	58
3	11	105	D040418		452	376	583	1184
3	12	106	D040417		1488	1485	1950	0
3	13	107	D040416		2146	1656	2066	0
3	14	108	D040415		277	207	256	0
3	15	109	D040414		0	0	0	0
3	32	126	D040715		0	0	0	0
4	2	143	D040221	D040222	0	0	0	0
4	3	144	D040223		2618	2224	3384	2127
4	4	145	D040224		586	672	811	1023
4	5	146	D040319		130	180	229	0
4	6	147	D040320		1029	966	1524	2
4	7	148	D040321		1528	2075	1604	2039
4	8	149	D040322		2668	3112	3962	3218
4	9	150	D040323		1772	2427	1619	604
4	10	151	D040324		3031	3192	2240	1078
4	11	152	D040419		2190	1942	2388	2135
4	12	153	D040420		2435	2224	2427	0
4	13	154	D040421		806	639	739	2275
4	14	155	D040422		0	0	0	0
4	15	156	D040423		0	0	0	0
4	16	157	D040424		0	0	0	0
4	32	173	D040722		0	0	0	0
5	2	190	D040227	D040228	0	0	0	0
5	3	191	D040226		1368	1205	1455	1966
5	4	192	D040225		101	85	85	624
5	5	193	D040330		0	0	0	0

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Model Row	Model Column	Model Cell	Cadastral Location #1	Cadastral Location #2	1985	1986	1987	1988
5	6	194	D040329		1152	1372	1435	997
5	7	195	D040328		744	888	684	871
5	8	196	D040327		1197	1374	1290	1996
5	9	197	D040326		1346	1728	1966	1624
5	10	198	D040325		2196	2121	1710	1540
5	11	199	D040430		1818	2076	2349	745
5	12	200	D040429		2651	2289	2561	1292
5	13	201	D040428		1448	287	462	582
5	14	202	D040427		2474	2376	2563	2471
5	15	203	D040426		352	479	756	258
5	16	204	D040425		3	20	56	0
5	32	220	D040727		200	171	295	677
6	2	237	D040233	D040234	0	0	0	0
6	3	238	D040235		1459	1319	1342	197
6	4	239	D040236		157	144	147	1657
6	5	240	D040331		0	0	0	0
6	6	241	D040332		267	324	305	0
6	7	242	D040333		1701	1771	2061	1605
6	8	243	D040334		1489	1910	1725	639
6	9	244	D040335		1383	1413	1545	181
6	10	245	D040336		2451	1941	2387	290
6	11	246	D040431		1584	1692	1805	2854
6	12	247	D040432		2422	1284	1727	4272
6	13	248	D040433		3169	2327	2951	1731
6	14	249	D040434		1623	1588	1768	3188
6	15	250	D040435		91	125	205	0
6	16	251	D040436		0	0	0	0
6	31	266	D040733		0	0	0	0
6	32	267	D040734		253	0	520	515
7	2	284	D050203	D050204	0	0	0	0
7	3	285	D050202		817	771	884	108
7	4	286	D050201		72	69	84	605
7	5	287	D050306		0	0	0	0
7	6	288	D050305		0	0	0	0
7	7	289	D050304		465	488	574	0
7	8	290	D050303		2088	1883	1797	1905
7	9	291	D050302		766	540	598	1476
7	10	292	D050301		1276	1015	1138	748
7	11	293	D050406		1106	456	957	2413
7	12	294	D050405		970	493	481	1417
7	13	295	D050404		1817	1636	1372	1044
7	14	296	D050403		1057	631	905	940
7	15	297	D050402		106	46	91	0
7	16	298	D050401		0	0	0	0
7	31	313	D050704		0	0	0	0
7	32	314	D050703		0	0	0	0
8	2	331	D050203	D050204	0	0	0	0

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Model Row	Model Column	Model Cell	Cadastral Location #1	Cadastral Location #2	1985	1986	1987	1988
8	3	332	D050202		1134	765	674	817
8	4	333	D050201		0	0	0	0
8	5	334	D050303		0	0	0	0
8	6	335	D050306		0	0	0	0
8	7	336	D050304		1860	1860	1860	1860
8	8	337	D050303		517	430	417	1196
8	9	338	D050302		752	340	493	540
8	10	339	D050301		1699	1353	1292	260
8	11	340	D050407		846	948	905	1816
8	12	341	D050408		494	417	444	721
8	13	342	D050409		573	416	487	747
8	14	343	D050410		409	392	418	1300
8	15	344	D050411		0	0	0	0
8	16	345	D050412		0	0	0	0
8	31	360	D050709		0	0	0	0
8	32	361	D050710		0	0	0	0
9	2	378	D050209	D050210	0	0	0	0
9	3	379	D050211		792	503	405	51
9	4	380	D050212		956	953	958	940
9	5	381	D050307		316	175	187	0
9	6	382	D050308		371	415	323	0
9	7	383	D050309		1292	1302	1088	990
9	8	384	D050310		240	240	240	240
9	9	385	D050311		782	346	516	966
9	10	386	D050312		1846	1468	1396	1492
9	11	387	AK-CHIN		798	1161	926	1251
9	12	388	AK-CHIN		483	417	519	1640
9	13	389	AK-CHIN		351	177	404	871
9	14	390	AK-CHIN		246	375	295	562
9	15	391	AK-CHIN		11	9	0	0
9	16	392	AK-CHIN		0	0	0	0
9	31	407	D050709		695	747	596	1070
9	32	408	D050710		0	0	0	0
10	4	427	D050213		129	119	124	125
10	5	428	D050318		1474	852	993	1639
10	6	429	D050317		1652	1795	1425	2725
10	7	430	D050316		1783	1637	831	749
10	8	431	D050315		2341	2346	2239	2328
10	9	432	D050314		0	0	0	0
10	10	433	D050313		570	570	570	570
10	11	434	AK-CHIN		0	0	0	0
10	12	435	AK-CHIN		2850	2850	2850	2850
10	13	436	AK-CHIN		0	0	0	0
10	14	437	AK-CHIN		0	0	1	0
10	15	438	AK-CHIN		105	80	2	0
10	16	439	AK-CHIN		0	0	0	0
10	17	440	D050518		0	0	0	0

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Model Row	Model Column	Model Cell	Cadastral Location #1	Cadastral Location #2	1985	1986	1987	1988
10	18	441	D050517		0	0	0	0
10	19	442	D050516		0	0	0	0
10	24	447	D050617		0	0	0	0
10	25	448	D050616		0	0	0	0
10	26	449	D050615		0	0	0	0
10	27	450	D050614		0	0	0	0
10	28	451	D050613		0	0	0	0
10	31	454	D050716		0	0	0	0
10	32	455	D050715		885	696	455	819
11	3	473	D050223		0	0	0	0
11	4	474	D050224		829	749	755	462
11	5	475	D050319		1085	749	988	1042
11	6	476	D050320		1486	1449	1203	155
11	7	477	D050321		2345	1628	1456	943
11	8	478	D050322		2971	2869	2864	2700
11	9	479	D050323		12	20	11	0
11	10	480	D050324		63	42	19	0
11	11	481	AK-CHIN		600	600	600	600
11	12	482	AK-CHIN		3480	3480	3480	3480
11	13	483	AK-CHIN		1080	1080	1080	1080
11	14	484	AK-CHIN		2445	2440	2574	2280
11	15	485	AK-CHIN		90	21	13	6
11	16	486	AK-CHIN		0	0	0	0
11	17	487	D050519		0	0	0	0
11	18	488	D050520		0	0	0	0
11	19	489	D050521		0	0	0	0
11	20	490	D050522		0	0	0	0
11	23	493	D050619		0	0	0	0
11	24	494	D050620		0	0	0	4
11	25	495	D050621		0	0	0	0
11	26	496	D050622		0	0	0	0
11	27	497	D050623		0	0	0	0
11	28	498	D050624		0	0	0	0
11	31	501	D050721		0	0	0	0
11	32	502	D050722		1759	2144	1721	3051
12	3	520	D050226		0	0	0	0
12	4	521	D050225		2195	1941	2134	1757
12	5	522	D050330		2405	1283	237	1695
12	6	523	D050329		2017	2026	1385	142
12	7	524	D050328		1340	1341	820	581
12	8	525	D050327		5206	5206	5151	5070
12	9	526	D050326		139	137	67	0
12	10	527	D050325		2219	2058	1867	1712
12	11	528	AK-CHIN		63	42	19	0
12	12	529	AK-CHIN		1110	1110	1110	1280
12	13	530	AK-CHIN		1230	1230	1230	1230
12	14	531	AK-CHIN		2505	2458	3666	3145

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Model Row	Model Column	Model Cell	Cadastral Location #1	Cadastral Location #2	1985	1986	1987	1988
12	15	532	AK-CHIN		438	411	749	842
12	16	533	AK-CHIN		0	0	0	0
12	17	534	D050530		0	0	0	0
12	18	535	D050529		0	0	0	0
12	19	536	D050528		0	0	0	0
12	20	537	D050527		0	0	0	0
12	21	538	D050526		0	0	0	0
12	22	539	D050525		0	0	0	0
12	23	540	D050630		0	0	0	0
12	24	541	D050629		0	0	0	0
12	25	542	D050628		0	0	0	0
12	26	543	D050627		163	137	169	167
12	27	544	D050626		22	18	22	22
12	28	545	D050625		0	0	0	0
12	31	548	D050728		133	226	212	240
12	32	549	D050727		623	666	740	649
13	2	566	D050233	D050234	0	0	0	0
13	3	567	D050235		0	0	0	0
13	4	568	D050236		157	149	357	393
13	5	569	D050331		369	710	433	980
13	6	570	D050332		660	30	524	467
13	7	571	D050333		327	171	318	252
13	8	572	D050334		441	176	230	339
13	9	573	D050335		605	336	421	478
13	10	574	D050336		603	347	447	506
13	11	575	AK-CHIN		408	199	233	446
13	12	576	AK-CHIN		225	12	26	271
13	13	577	AK-CHIN		890	306	587	697
13	14	578	AK-CHIN		376	330	655	769
13	15	579	AK-CHIN		281	256	843	1162
13	16	580	AK-CHIN		8	8	23	30
13	17	581	D050531		49	67	79	0
13	18	582	D050532		0	0	0	0
13	19	583	D050533		0	0	0	0
13	20	584	D050534		0	0	0	0
13	21	585	D050535		0	0	0	0
13	22	586	D050536		0	0	0	0
13	23	587	D050631		0	0	0	0
13	24	588	D050632		0	0	0	0
13	25	589	D050633		0	0	0	0
13	26	590	D050634		8	7	9	9
13	27	591	D050635		1	1	1	1
13	28	592	D050636		0	0	0	0
13	29	593	D050731		0	0	0	0
13	31	595	D050733		71	56	101	70
13	32	596	D050734		627	545	766	668
14	2	613	D060203	D060204	12	3	7	5

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Model Row	Model Column	Model Cell	Cadastral Location #1	Cadastral Location #2	1985	1986	1987	1988
14	3	614	D060202		0	0	0	0
14	4	615	D060201		246	278	219	228
14	5	616	D060300		269	283	184	553
14	6	617	D060306		383	253	308	474
14	7	618	D060305		466	326	483	381
14	8	619	D060304		254	234	144	395
14	9	620	D060303		437	165	228	322
14	10	621	D060302		445	173	230	410
14	11	622	D060301		191	4	9	245
14	12	623	D060406		432	98	428	406
14	13	624	D060405		463	112	360	606
14	14	625	D060404		227	58	191	318
14	15	626	D060403		522	181	401	371
14	16	627	D060402		3	8	8	70
14	17	628	D060501		21	57	61	40
14	18	629	D060506		0	0	0	0
14	19	630	D060505		0	0	0	0
14	20	631	D060504		0	0	0	0
14	21	632	D060503		0	0	0	0
14	22	633	D060502		0	0	0	0
14	23	634	D060601		0	0	0	0
14	24	635	D060606		0	0	0	0
14	25	636	D060605		193	179	166	149
14	26	637	D060604		122	104	125	123
14	27	638	D060603		13	11	13	13
14	28	639	D060602		0	0	0	0
14	29	640	D060701		0	0	0	0
14	30	641	D060706		107	57	70	47
14	31	642	D060705		20	18	15	23
14	32	643	D060704		275	300	396	332
14	33	644	D060703		98	58	70	59
14	34	645	D060702		415	246	322	263
14	35	646	D060801		609	358	278	277
14	36	647	D060806		490	224	379	317
14	37	648	D060805		420	334	366	279
14	38	649	D060804		539	585	528	412
14	39	650	D060803		493	485	771	674
14	40	651	D060802		797	291	304	411
14	41	652	D060901		1387	1385	1475	1454
14	42	653	D060906		2937	3778	3030	3682
14	43	654	D060905		0	0	0	0
14	44	655	D060904		328	3	6	0
14	45	656	D060902	D060903	0	0	0	0
14	46	657	D060901		0	0	0	0
15	2	660	D060209	D0602010	0	0	0	0
15	3	661	D060211		0	0	0	0
15	4	662	D060212		314	120	164	109

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Model Row	Model Column	Model Cell	Cadastral Location #1	Cadastral Location #2	1985	1986	1987	1988
15	5	663	D060300		1425	498	495	13
15	6	664	D060307		1300	658	206	801
15	7	665	D060308		1593	1362	1340	596
15	8	666	D060309		1313	732	732	0
15	9	667	D060310		439	198	85	0
15	10	668	D060311		1190	609	610	410
15	11	669	D060312		935	1233	0	0
15	12	670	D060407		1382	807	1327	0
15	13	671	D060408		796	0	605	406
15	14	672	D060409		1209	0	876	464
15	15	673	D060410		315	166	769	860
15	16	674	D060411		4032	473	1273	1410
15	17	675	D060512		0	12	3	0
15	18	676	D060507		0	0	0	0
15	19	677	D060508		0	0	0	0
15	20	678	D060509		0	0	0	0
15	21	679	D060510		0	0	0	0
15	22	680	D060511		0	41	0	52
15	23	681	D060512		84	0	0	0
15	24	682	D060607		1124	528	400	348
15	25	683	D060608		468	428	243	451
15	26	684	D060609		1062	1146	956	1265
15	27	685	D060610		897	866	1041	2764
15	28	686	D060611		235	298	222	195
15	29	687	D060612		493	108	845	304
15	30	688	D060707		1774	1098	1266	1067
15	31	689	D060708		1033	1027	596	1389
15	32	690	D060709		0	0	0	0
15	33	691	D060710		1347	862	1085	1429
15	34	692	D060711		942	504	1584	1067
15	35	693	D060712		457	174	148	0
15	36	694	D060807		1382	726	1179	1373
15	37	695	D060808		0	0	0	0
15	38	696	D060809		563	961	892	1422
15	39	697	D060810		967	323	586	551
15	40	698	D060811		2039	765	1128	961
15	41	699	D060812		0	0	0	0
15	42	700	D060907		347	370	223	421
15	43	701	D060908		0	0	0	0
15	44	702	D060909		0	0	0	0
15	45	703	D060910	D060911	0	0	0	0
15	46	704	D060912		0	0	0	0
16	3	708	D060214		0	0	0	0
16	4	709	D060213		365	325	252	0
16	5	710	D060200		365	325	252	0
16	6	711	D060318		1118	1149	1595	1119
16	7	712	D060317		1681	1856	1915	1156

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Model Row	Model Column	Model Cell	Cadastral Location #1	Cadastral Location #2	1985	1986	1987	1988
16	8	713	D060316		728	986	359	4
16	9	714	D060315		2306	1548	636	0
16	10	715	D060314		0	0	0	0
16	11	716	D060313		1209	1257	1409	425
16	12	717	D060418		1828	995	1021	383
16	13	718	D060417		0	45	41	21
16	14	719	D060416		2558	0	1779	739
16	15	720	D060415		1299	1066	1097	1098
16	16	721	D060414		828	97	658	954
16	17	722	D060513		981	1055	1356	1348
16	18	723	D060518		0	0	0	0
16	19	724	D060517		0	0	0	0
16	20	725	D060516		0	0	0	0
16	21	726	D060515		0	0	0	0
16	22	727	D060514		0	0	0	0
16	23	728	D060513		30	25	31	21
16	24	729	D060618		0	0	0	0
16	25	730	D060617		0	0	0	0
16	26	731	D060616		2307	2507	3533	3057
16	27	732	D060615		3133	2735	3178	3146
16	28	733	D060614		2044	1730	1699	1548
16	29	734	D060713		860	605	698	908
16	30	735	D060718		1512	1593	1752	1322
16	31	736	D060717		599	312	328	624
16	32	737	D060716		1065	838	1098	1264
16	33	738	D060715		2684	1898	1945	2914
16	34	739	D060714		1069	929	1108	995
16	35	740	D060713		2302	1281	926	18763
16	36	741	D060818		2032	1495	1767	2195
16	37	742	D060817		1558	770	908	1007
16	38	743	D060816		1211	1267	1793	1670
16	39	744	D060815		176	63	52	19
16	40	745	D060814		459	99	134	187
16	41	746	D060813		1	10	37	17
16	42	747	D060918		2309	708	916	852
16	43	748	D060917		0	0	0	0
16	44	749	D060916		0	0	0	0
16	45	750	D060915	D060914	0	0	0	0
16	46	751	D060913		0	0	0	0
17	3	755	D060223		0	0	0	0
17	4	756	D060224		0	0	0	0
17	5	757	D060200		0	0	0	0
17	6	758	D060319		652	420	120	0
17	7	759	D060320		72	47	13	0
17	8	760	D060321		226	82	64	0
17	9	761	D060322		2029	742	577	45
17	10	762	D060323		6168	2530	1283	5

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Model Row	Model Column	Model Cell	Cadastral Location #1	Cadastral Location #2	1985	1986	1987	1988
17	11	763	D060324		1507	1035	1270	2121
17	12	764	D060419		937	1323	1225	1268
17	13	765	D060420		1890	1226	1766	1703
17	14	766	D060421		1274	760	625	215
17	15	767	D060422		1311	253	195	145
17	16	768	D060423		0	0	0	0
17	17	769	D060424		55	0	0	0
17	18	770	D060519		0	584	654	692
17	19	771	D060520		5	95	112	107
17	20	772	D060521		0	0	0	0
17	21	773	D060522		478	610	742	955
17	22	774	D060523		105	36	145	110
17	23	775	D060524		0	0	0	0
17	24	776	D060619		0	0	0	0
17	25	777	D060620		115	104	126	110
17	26	778	D060621		892	792	750	1326
17	27	779	D060622		1236	1533	1855	1959
17	28	780	D060623		2883	2915	3160	3125
17	29	781	D060624		2971	1747	2597	2570
17	30	782	D060719		2713	2303	2656	2355
17	31	783	D060720		1102	546	1333	1459
17	32	784	D060721		2701	1355	2244	2411
17	33	785	D060722		1745	1782	3400	3275
17	34	786	D060723		357	57	318	308
17	35	787	D060724		1177	1000	538	166
17	36	788	D060819		376	0	0	0
17	37	789	D060820		679	0	0	69
17	38	790	D060821		1077	915	881	1355
17	39	791	D060822		1374	493	529	481
17	40	792	D060823		805	722	325	60
17	41	793	D060824		374	299	475	10
17	42	794	D060919		324	50	0	0
17	43	795	D060920		0	0	0	0
17	44	796	D060921		0	0	0	0
17	45	797	D060923		0	0	0	0
17	46	798	D060924		0	0	0	0
18	7	806	D060329		0	0	0	0
18	8	807	D060328		91	15	1	0
18	9	808	D060327		822	136	11	0
18	10	809	D060326		2872	884	245	0
18	11	810	D060325		1239	715	1090	153
18	12	811	D060430		844	498	896	64
18	13	812	D060429		1334	1050	796	244
18	14	813	D060428		1484	1012	904	373
18	15	814	D060427		1010	508	457	269
18	16	815	D060426		83	47	164	145
18	17	816	D060425		33	30	45	11

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Model Row	Model Column	Model Cell	Cadastral Location #1	Cadastral Location #2	1985	1986	1987	1988
18	18	817	D060530		328	229	377	52
18	19	818	D060529		30	31	29	17
18	20	819	D060528		0	0	0	0
18	21	820	D060527		736	1701	1492	1172
18	22	821	D060526		0	0	0	0
18	23	822	D060525		0	0	0	0
18	24	823	D060630		220	99	5	243
18	25	824	D060629		73	25	17	107
18	26	825	D060628		33	31	254	40
18	27	826	D060627		0	0	0	0
18	28	827	D060626		604	1029	1520	1225
18	29	828	D060625		117	1240	0	730
18	30	829	D060730		1036	735	937	828
18	31	830	D060729		0	0	0	0
18	32	831	D060728		519	302	524	680
18	33	832	D060727		0	0	0	0
18	34	833	D060726		0	0	0	0
18	35	834	D060725		0	0	0	0
18	36	835	D060830		617	375	276	718
18	37	836	D060829		862	490	495	919
18	38	837	D060828		514	385	350	395
18	39	838	D060827		2401	1207	1277	747
18	40	839	D060826		0	0	0	0
18	41	840	D060825		3092	2257	1611	771
18	42	841	D060930		0	0	0	0
18	43	842	D060929		0	0	0	0
18	44	843	D060928		0	0	0	0
18	45	844	D060927	D060926	0	0	0	0
18	46	845	D060925		0	0	0	0
19	5	851	D060200		0	0	0	0
19	6	852	D060331		0	0	0	0
19	7	853	D060332		0	0	0	0
19	8	854	D060333		44	29	17	0
19	9	855	D060334		394	262	149	229
19	10	856	D060335		3272	1094	209	0
19	11	857	D060336		1174	1064	248	0
19	12	858	D060431		2111	1982	1602	1488
19	13	859	D060432		0	0	810	264
19	14	860	D060433		1400	822	192	0
19	15	861	D060434		1407	835	907	422
19	16	862	D060435		411	328	327	105
19	17	863	D060436		0	0	0	0
19	18	864	D060531		2594	1135	2189	414
19	19	865	D060532		0	0	0	0
19	20	866	D060533		0	0	0	0
19	21	867	D060534		1	2	37	62
19	22	868	D060535		404	633	310	291

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Model Row	Model Column	Model Cell	Cadastral Location #1	Cadastral Location #2	1985	1986	1987	1988
19	23	869	D060536		0	0	0	0
19	24	870	D060631		0	0	0	0
19	25	871	D060632		0	0	0	0
19	26	872	D060633		0	0	0	0
19	27	873	D060634		207	398	314	294
19	28	874	D060635		1461	1346	1741	1866
19	29	875	D060636		750	814	333	1669
19	30	876	D060731		0	0	0	0
19	31	877	D060732		260	369	430	410
19	32	878	D060733		1726	1820	2214	2880
19	33	879	D060734		2455	2936	3611	3526
19	34	880	D060735		2867	2306	4257	4199
19	35	881	D060736		140	183	143	190
19	36	882	D060831		32	0	0	0
19	37	883	D060832		1459	1391	1047	536
19	38	884	D060833		1392	1510	1510	1600
19	39	885	D060834		1410	447	235	0
19	40	886	D060835		696	102	196	0
19	41	887	D060836		0	0	0	0
19	42	888	D060931		0	0	0	0
19	43	889	D060932		0	0	0	0
19	44	890	D060933		0	0	0	0
19	45	891	D060934	D060935	0	0	0	0
20	5	898	D070306		0	0	0	0
20	6	899	D070305		0	0	0	0
20	7	900	D070304		0	0	0	0
20	8	901	D070303		0	0	0	0
20	9	902	D070302		0	0	0	0
20	10	903	D070301		0	0	0	0
20	11	904	D070406		0	0	0	0
20	12	905	D070405		938	490	255	9
20	13	906	D070404		309	384	175	1
20	14	907	D070403		1349	517	248	0
20	15	908	D070402		1808	1583	758	229
20	16	909	D070401		871	316	15	97
20	17	910	D070400		871	316	15	167
20	18	911	D070506		19	19	28	28
20	19	912	D070505		0	0	0	0
20	20	913	D070504		0	0	0	0
20	21	914	D070503		0	0	0	0
20	22	915	D070502		0	0	0	0
20	23	916	D070601		0	0	0	0
20	24	917	D070606		347	283	260	548
20	25	918	D070605		0	0	0	0
20	26	919	D070604		0	0	0	0
20	27	920	D070603		0	0	0	0
20	28	921	D070602		14	27	11	5

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Model Row	Model Column	Model Cell	Cadastral Location #1	Cadastral Location #2	1985	1986	1987	1988
20	29	922	D070701		225	429	384	881
20	30	923	D070706		161	156	404	242
20	31	924	D070705		1149	1000	1211	1272
20	32	925	D070704		0	0	0	0
20	33	926	D070703		0	0	0	0
20	34	927	D070702		0	0	0	0
20	35	928	D070701		454	353	429	611
20	36	929	D070806		1682	655	743	0
20	37	930	D070805		206	83	0	0
20	38	931	D070804		1668	1064	978	113
20	39	932	D070803		1874	197	273	3
20	40	933	D070802		0	0	0	0
20	41	934	D070801		0	0	0	0
20	42	935	D070906		0	0	0	0
20	43	936	D070905		0	0	0	0
20	44	937	D070904		0	0	0	0
20	45	938	D070903	D070902	0	0	0	0
21	5	945	D070307		0	0	0	0
21	6	946	D070308		0	0	0	0
21	7	947	D070309		0	0	0	0
21	8	948	D070310		0	0	0	0
21	9	949	D070311		0	0	0	0
21	10	950	D070312		0	0	0	0
21	11	951	D070407		0	0	0	0
21	12	952	D070408		178	182	173	572
21	13	953	D070409		28	80	68	0
21	14	954	D070410		201	184	137	0
21	15	955	D070411		997	371	201	0
21	16	956	D070412		372	6	85	137
21	17	957	D070400		372	6	85	529
21	18	958	D070507		0	0	0	0
21	19	959	D070508		0	0	0	0
21	20	960	D070509		0	0	0	0
21	21	961	D070510		0	0	0	0
21	22	962	D070511		0	0	0	0
21	23	963	D070512		0	0	0	0
21	24	964	D070607		0	0	0	0
21	25	965	D070608		0	0	0	0
21	26	966	D070609		0	0	0	0
21	29	969	D070612		81	653	639	604
21	30	970	D070707		0	0	0	0
21	31	971	D070708		12	18	0	0
21	32	972	D070709		0	0	0	0
21	33	973	D070710		0	0	0	0
21	34	974	D070711		0	0	0	0
21	35	975	D070712		870	116	9	0
21	36	976	D070807		0	5	23	14

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Model Row	Model Column	Model Cell	Cadastral Location #1	Cadastral Location #2	1985	1986	1987	1988
21	37	977	D070808		105	53	83	0
21	38	978	D070809		0	0	0	0
21	39	979	D070810		2314	0	0	0
21	40	980	D070811		0	0	0	0
21	41	981	D070812		0	0	0	0
21	42	982	D070907		0	0	0	0
21	43	983	D070908		0	0	0	0
21	44	984	D070909		0	0	0	0
21	45	985	D070910	D070911	0	0	0	0
22	7	994	D070316		0	0	0	0
22	8	995	D070315		0	0	0	0
22	9	996	D070314		0	0	0	0
22	10	997	D070313		0	0	0	0
22	11	998	D070418		0	0	0	0
22	12	999	D070417		416	424	404	686
22	13	1000	D070416		65	187	159	304
22	14	1001	D070415		468	429	319	0
22	15	1002	D070414		1257	788	955	125
22	16	1003	D070413		482	180	216	0
22	17	1004	D070400		429	174	192	181
22	18	1005	D070518		114	616	28	0
22	19	1006	D070517		0	0	0	0
22	20	1007	D070516		0	0	0	0
22	21	1008	D070515		0	0	0	0
22	22	1009	D070514		0	0	0	0
22	23	1010	D070613		0	0	0	0
22	24	1011	D070518		0	0	0	0
22	25	1012	D070617		0	0	0	0
22	26	1013	D070616		0	0	0	0
22	29	1016	D070613		0	0	0	0
22	30	1017	D070718		0	0	38	30
22	31	1018	D070717		0	0	0	0
22	32	1019	D070716		0	0	0	0
22	33	1020	D070715		0	0	0	0
22	34	1021	D070714		423	456	613	60
22	35	1022	D070713		230	446	106	0
22	36	1023	D070818		1871	1244	1151	1390
22	37	1024	D070817		0	0	5	0
22	38	1025	D070816		569	622	0	0
22	39	1026	D070815		698	0	11	0
22	40	1027	D070814		518	0	0	0
22	41	1028	D070813		0	0	0	0
22	42	1029	D070918		0	0	0	0
22	43	1030	D070917		0	0	0	0
22	44	1031	D070916		0	0	0	0
22	45	1032	D070915	D070914	0	0	0	0
23	8	1042	D070322		0	0	0	0

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Model Row	Model Column	Model Cell	Cadastral Location #1	Cadastral Location #2	1985	1986	1987	1988
23	9	1043	D070323		0	0	0	0
23	10	1044	D070324		0	0	0	0
23	11	1045	D070419		0	0	0	0
23	12	1046	D070420		0	0	0	0
23	13	1047	D070421		0	0	0	0
23	14	1048	D070422		0	0	0	0
23	15	1049	D070423		991	652	1628	466
23	16	1050	D070424		405	287	180	0
23	17	1051	D070400		405	287	180	0
23	18	1052	D070519		0	0	0	0
23	19	1053	D070520		0	0	0	0
23	20	1054	D070521		0	0	0	0
23	21	1055	D070522		0	0	0	0
23	22	1056	D070523		0	0	0	0
23	23	1057	D070524		0	0	0	0
23	24	1058	D070619		0	0	0	0
23	25	1059	D070620		0	0	0	0
23	26	1060	D070621		0	0	0	0
23	29	1063	D070724		0	0	2	2
23	30	1064	D070719		0	0	0	0
23	31	1065	D070720		0	0	0	0
23	32	1066	D070721		0	0	0	0
23	33	1067	D070722		0	0	0	0
23	34	1068	D070723		561	615	215	180
23	35	1069	D070624		204	257	207	0
23	36	1070	D070819		1086	1552	1313	475
23	37	1071	D070820		0	0	0	0
23	38	1072	D070821		341	440	2	0
23	39	1073	D070822		1008	0	102	0
23	40	1074	D070823		1015	57	0	0
23	41	1075	D070824		0	0	0	0
23	42	1076	D070919		0	0	0	0
23	43	1077	D070920		0	0	0	0
23	44	1078	D070921		0	0	0	0
23	45	1079	D070922	D070923	0	0	0	0
24	8	1089	D070327		0	0	0	0
24	9	1090	D070326		0	0	0	0
24	10	1091	D070325		0	0	0	0
24	11	1092	D070430		0	0	0	0
24	12	1093	D070429		0	0	0	0
24	13	1094	D070428		0	0	0	0
24	14	1095	D070427		0	0	0	0
24	15	1096	D070426		0	0	0	0
24	16	1097	D070425		1	79	0	0
24	17	1098	D070400		1	79	0	0
24	18	1099	D070530		0	0	0	0
24	19	1100	D070529		0	0	0	0

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Model Row	Model Column	Model Cell	Cadastral Location #1	Cadastral Location #2	1985	1986	1987	1988
24	20	1101	D070528		0	0	0	0
24	21	1102	D070527		0	0	0	0
24	22	1103	D070526		0	0	0	0
24	23	1104	D070525		0	0	0	0
24	24	1105	D070630		0	0	0	0
24	25	1106	D070629		1123	1189	603	748
24	26	1107	D070628		0	0	0	0
24	27	1108	D070627		0	0	0	0
24	29	1110	D070625		0	0	0	0
24	30	1111	D070730		0	0	0	0
24	31	1112	D070729		0	0	0	0
24	32	1113	D070728		0	0	0	0
24	33	1114	D070727		0	0	0	0
24	34	1115	D070726		0	0	0	0
24	35	1116	D070725		0	0	52	265
24	36	1117	D070830		756	822	774	506
24	37	1118	D070829		0	0	0	0
24	38	1119	D070828		313	287	769	791
24	39	1120	D070827		420	0	0	0
24	40	1121	D070826		729	600	104	0
24	41	1122	D070825		44	40	47	0
24	42	1123	D070930		0	0	0	0
24	43	1124	D070929		0	0	0	0
24	44	1125	D070928		0	0	0	0
24	45	1126	D070927	D070926	0	0	0	0
25	12	1140	D070432		0	0	0	0
25	13	1141	D070433		0	0	0	0
25	14	1142	D070434		0	0	0	0
25	15	1143	D070435		0	0	0	0
25	16	1144	D070436		0	0	0	0
25	17	1145	D070400		0	0	0	0
25	18	1146	D070531		0	0	0	0
25	19	1147	D070532		0	0	0	0
25	20	1148	D070533		0	0	0	0
25	21	1149	D070534		0	0	0	0
25	22	1150	D070535		0	0	0	0
25	23	1151	D070536		0	0	0	0
25	24	1152	D070631		0	0	0	0
25	25	1153	D070632		0	0	0	0
25	26	1154	D070633		809	625	660	417
25	27	1155	D070634		3965	3433	4329	3665
25	28	1156	D070635		5211	4195	4780	4961
25	29	1157	D070636		1427	1360	1074	1377
25	30	1158	D070731		2125	2572	2251	2137
25	31	1159	D070732		1202	1220	1119	985
25	32	1160	D070733		0	0	0	0
25	33	1161	D070734		0	0	0	0

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Model Row	Model Column	Model Cell	Cadastral Location #1	Cadastral Location #2	1985	1986	1987	1988
25	34	1162	D070735		0	0	175	0
25	35	1163	D070736		27	0	0	104
25	36	1164	D070831		1135	796	309	747
25	37	1165	D070832		751	656	843	473
25	38	1166	D070833		1495	1752	1983	2031
25	39	1167	D070834		335	701	1790	952
25	40	1168	D070835		1680	815	936	972
25	41	1169	D070836		393	361	426	328
25	42	1170	D070931		0	0	0	0
25	43	1171	D070932		0	0	0	0
25	44	1172	D070933		0	0	0	0
26	13	1188	D080404		0	0	0	0
26	14	1189	D080403		0	0	0	0
26	15	1190	D080402		0	0	0	0
26	16	1191	D080401		0	0	0	0
26	17	1192	D080506		0	0	0	0
26	18	1193	D080505		0	0	0	0
26	19	1194	D080504		0	0	0	0
26	20	1195	D080503		0	0	0	0
26	21	1196	D080502		0	0	0	0
26	22	1197	D080501		0	0	0	0
26	23	1198	D080500		0	0	0	0
26	24	1199	D080606		0	0	0	0
26	25	1200	D080605		0	0	0	0
26	26	1201	D080604		0	0	0	0
26	27	1202	D080603		1485	1522	1557	0
26	28	1203	D080602		35	49	66	51
26	29	1204	D080601		123	117	85	107
26	30	1205	D080706		0	190	172	0
26	31	1206	D080705		0	0	0	0
26	32	1207	D080704		0	0	0	0
26	33	1208	D080703		0	0	0	0
26	34	1209	D080702		0	0	0	0
26	35	1210	D080701		112	54	74	0
26	36	1211	D080806		1477	651	1139	1541
26	37	1212	D080805		0	0	0	0
26	38	1213	D080804		1591	1899	2239	2497
26	39	1214	D080803		0	0	0	0
26	40	1215	D080802		0	0	0	0
26	41	1216	D080801		2043	1677	1777	1589
26	42	1217	D080906		0	0	0	0
26	43	1218	D080905		0	0	0	0
27	14	1236	D080410		0	0	0	0
27	15	1237	D080411		0	0	0	0
27	16	1238	D080412		0	0	0	0
27	17	1239	D080507		0	0	0	0
27	18	1240	D080508		0	0	0	0

PINAL AMA MODEL PUMPAGE
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Model Row	Model Column	Model Cell	Cadastral Location #1	Cadastral Location #2	1985	1986	1987	1988
27	19	1241	D080509		0	0	0	0
27	20	1242	D080510		0	0	0	0
27	21	1243	D080511		0	0	0	0
27	22	1244	D080512		0	0	0	0
27	24	1246	D080607		0	0	0	0
27	25	1247	D080608		0	0	0	0
27	26	1248	D080609		351	785	700	0
27	27	1249	D080610		2063	1862	2211	4713
27	28	1250	D080611		1889	1884	2117	1472
27	29	1251	D080612		527	327	344	459
27	30	1252	D080707		0	21	19	0
27	31	1253	D080708		0	0	0	0
27	32	1254	D080709		0	0	0	0
27	33	1255	D080710		0	0	0	0
27	34	1256	D080711		742	609	716	643
27	35	1257	D080712		0	0	0	0
27	36	1258	D080807		342	133	167	51
27	37	1259	D080808		895	1464	1199	979
27	38	1260	D080809		1792	1336	1911	1858
27	39	1261	D080810		599	549	723	736
27	40	1262	D080811		1490	1355	1507	1232
27	41	1263	D080812		0	2466	3478	3513
27	42	1264	D080907		3066	3144	3977	3149
27	43	1265	D080908		0	0	0	0
28	14	1283	D080415		0	0	0	0
28	15	1284	D080414		0	0	0	0
28	16	1285	D080413		0	0	0	0
28	17	1286	D080518		0	0	0	0
28	18	1287	D080517		0	0	0	0
28	19	1288	D080516		0	0	0	0
28	20	1289	D080515		0	0	0	0
28	21	1290	D080514		0	0	0	0
28	25	1294	D080617		0	0	0	0
28	26	1295	D080616		39	87	78	969
28	27	1296	D080615		211	188	227	0
28	28	1297	D080614		209	209	548	0
28	29	1298	D080613		57	35	37	0
28	30	1299	D080718		0	0	0	0
28	31	1300	D080717		0	0	21	167
28	32	1301	D080716		0	0	191	27
28	33	1302	D080715		0	0	0	0
28	34	1303	D080714		0	0	0	0
28	35	1304	D080713		664	495	818	737
28	36	1305	D080818		579	403	1431	1113
28	37	1306	D080817		196	0	225	197
28	38	1307	D080816		714	831	908	999
28	39	1308	D080815		964	1227	1395	1178

PINAL AMA MODEL PUMPAGE
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Model Row	Model Column	Model Cell	Cadastral Location #1	Cadastral Location #2	1985	1986	1987	1988
28	40	1309	D080814		2585	2368	2883	2456
28	41	1310	D080813		928	1066	1700	1323
28	42	1311	D080918		1174	1413	1649	1803
28	43	1312	D080917		0	0	0	0
29	17	1333	D080519		0	0	0	0
29	18	1334	D080520		0	0	0	0
29	19	1335	D080521		0	0	0	0
29	20	1336	D080522		0	0	0	0
29	23	1339	D080524		0	0	0	0
29	24	1340	D080619		0	0	0	0
29	25	1341	D080620		0	0	0	0
29	26	1342	D080621		0	0	0	0
29	27	1343	D080622		0	0	0	0
29	28	1344	D080623		214	0	35	346
29	29	1345	D080724		0	0	0	0
29	30	1346	D080719		0	0	0	0
29	31	1347	D080720		43	40	33	0
29	32	1348	D080721		409	391	334	378
29	33	1349	D080722		185	319	344	410
29	34	1350	D080723		396	389	285	561
29	35	1351	D080724		1742	1299	1150	1225
29	36	1352	D080819		440	95	0	305
29	37	1353	D080820		1581	1305	726	836
29	38	1354	D080821		3280	2536	2396	2665
29	39	1355	D080822		496	374	244	178
29	40	1356	D080823		22	29	34	26
29	41	1357	D080525		1820	1133	1619	1176
29	42	1358	D080919		0	0	0	0
29	43	1359	D080920		0	0	0	0
30	23	1386	D080625		0	0	0	0
30	24	1387	D080630		0	0	0	0
30	25	1388	D080629		0	0	0	0
30	26	1389	D080628		0	0	0	0
30	27	1390	D080627		0	0	0	0
30	28	1391	D080626		2169	2227	2805	2694
30	29	1392	D080625		0	0	0	0
30	30	1393	D080730		10	20	22	0
30	31	1394	D080729		93	177	195	0
30	32	1395	D080728		49	53	47	0
30	33	1396	D080727		57	124	129	173
30	34	1397	D080726		1126	1571	714	762
30	35	1398	D080725		769	453	576	703
30	36	1399	D080830		177	162	136	408
30	37	1400	D080829		1579	1458	1227	862
30	38	1401	D080828		483	379	588	424
30	39	1402	D080827		3911	3861	3951	3552
30	40	1403	D080826		0	0	0	0

PINAL AMA MODEL PUMPAGE
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Model Row	Model Column	Model Cell	Cadastral Location #1	Cadastral Location #2	1985	1986	1987	1988
30	41	1404	D080825		663	621	315	736
30	42	1405	D080930		0	0	0	0
30	43	1406	D080929		0	0	0	0
31	23	1433	D080536		0	0	0	0
31	24	1434	D080631		0	0	0	0
31	25	1435	D080632		0	0	0	0
31	26	1436	D080633		0	0	0	0
31	27	1437	D080634		0	0	0	0
31	28	1438	D080635		2031	2205	2185	1490
31	29	1439	D080636		0	0	0	0
31	30	1440	D080731		0	0	0	0
31	31	1441	D080732		54	20	22	128
31	32	1442	D080733		389	0	0	0
31	33	1443	D080734		6	14	14	0
31	34	1444	D080735		671	747	1206	1001
31	35	1445	D080736		513	487	508	482
31	36	1446	D080831		294	165	311	763
31	37	1447	D080832		766	405	442	1045
31	38	1448	D080833		1228	1581	1590	1766
31	39	1449	D080834		0	0	0	0
31	40	1450	D080835		0	0	0	0
31	41	1451	D080836		0	0	0	0
31	42	1452	D080931		0	0	0	0
31	43	1453	D080932		0	0	0	0
31	44	1454	D080933		0	0	0	0
32	24	1481	D090605		0	0	0	0
32	25	1482	D090604		0	0	0	0
32	26	1483	D090603		0	0	0	0
32	27	1484	D090602		0	0	0	0
32	28	1485	D090601		199	218	208	0
32	29	1486	D090600		0	0	0	0
32	30	1487	D090706		0	0	0	0
32	31	1488	D090705		4	0	0	0
32	32	1489	D090704		150	72	107	0
32	33	1490	D090703		669	645	958	647
32	34	1491	D090702		1467	1655	1993	1032
32	35	1492	D090701		1032	874	1254	898
32	36	1493	D090806		347	510	1012	998
32	37	1494	D090805		691	755	814	879
32	38	1495	D090804		0	0	0	1
32	39	1496	D090803		1	0	1	0
32	40	1497	D090802		0	0	0	0
32	41	1498	D090801		0	0	0	0
32	42	1499	D090906		0	0	0	0
32	43	1500	D090905		0	0	0	0
32	44	1501	D090904		0	0	0	0
33	27	1531	D090611	D090614	0	0	0	0

PINAL AMA MODEL PUMPAGE
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Model Row	Model Column	Model Cell	Cadastral Location #1	Cadastral Location #2	1985	1986	1987	1988
33	28	1532	D090612	D090613	0	0	0	0
33	29	1533	D090600	D090600	0	0	0	0
33	30	1534	D090707		305	242	303	0
33	31	1535	D090708		2186	1809	2548	0
33	32	1536	D090709		20	37	68	0
33	33	1537	D090710		74	72	107	160
33	34	1538	D090711		1295	1094	1215	1411
33	35	1539	D090712		1284	1835	1469	1617
33	36	1540	D090807		1922	1668	2125	1235
33	37	1541	D090808		2174	2053	2382	1756
33	38	1542	D090809		2755	2212	2857	4117
33	39	1543	D090810		1840	2676	2541	1725
33	40	1544	D090811		0	0	0	0
33	41	1545	D090812		0	0	0	0
33	42	1546	D090907		0	0	0	0
33	43	1547	D090908		0	0	0	0
34	29	1580	D090600		575	469	440	0
34	30	1581	D090719	D090718	1684	1279	1365	338
34	31	1582	D090717	D090720	3928	2411	3875	225
34	32	1583	D090716	D090721	1084	966	1380	545
34	33	1584	D090715	D090722	438	245	254	319
34	34	1585	D090714	D090723	894	627	926	712
34	35	1586	D090713	D090724	993	910	1484	1583
34	36	1587	D090818	D090819	2644	2836	2613	2853
34	37	1588	D090817	D090820	1683	1427	1547	2335
34	38	1589	D090816	D090821	155	150	123	94
34	39	1590	D090815	D090822	1241	1201	987	414
34	40	1591	D090814	D090823	736	903	864	0
34	41	1592	D090813	D090324	0	0	0	0
34	42	1593	D090918	D090919	0	0	0	0
34	43	1594	D090917	D090920	0	0	0	0
34	28	1579	D090625	D090636	477	406	386	0
35	29	1627	D090600	D090600	767	909	990	2771
35	30	1628	D090730		726	469	462	1045
35	31	1629	D090729		1526	1216	1455	2020
35	32	1630	D090728		3311	3503	3712	4092
35	33	1631	D090727		2757	3211	2994	2810
35	34	1632	D090726		204	185	169	0
35	35	1633	D090725		742	647	687	342
35	36	1634	D090830		2126	2578	2169	1341
35	37	1635	D090829		2031	2580	1771	1291
35	38	1636	D090828		0	0	97	0
35	39	1637	D090827		57	35	395	1208
35	40	1638	D090826		1010	908	1457	2048
35	41	1639	D090825		3029	2922	2829	3251
35	42	1640	D090930		349	639	713	0
35	43	1641	D090929		0	0	0	0

PINAL AMA MODEL PUMPAGE
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Model Row	Model Column	Model Cell	Cadastral Location #1	Cadastral Location #2	1985	1986	1987	1988
35	44	1642	D090928		83	89	94	0
35	45	1643	D090927		165	177	187	0
36	27	1672	D100602		13	0	4	14
36	28	1673	D100601		761	811	870	560
36	29	1674	D100706		2329	2798	2639	2878
36	30	1675	D100605	D100631	830	1036	1079	1380
36	31	1676	D100604	D100632	0	0	0	0
36	32	1677	D100703	D100733	0	0	0	0
36	33	1678	D100702	D100734	95	131	115	0
36	34	1679	D100701	D100735	1287	1394	1248	888
36	35	1680	D100800	D100736	1407	1518	1561	2407
36	36	1681	D100806	D100831	99	115	484	0
36	37	1682	D100805	D100832	691	807	742	1173
36	38	1683	D100804	D100833	0	0	216	87
36	39	1684	D100803	D100834	0	0	0	0
36	40	1685	D100802	D100835	465	356	851	0
36	41	1686	D100901	D100936	2904	2349	2280	1580
36	42	1687	D100906	D100931	698	1278	1439	2062
36	43	1688	D100905	D100932	0	0	107	0
36	44	1689	D100904	D100933	704	567	617	202
36	45	1690	D100902	D100935	695	595	643	834
37	27	1719	D100611	D100614	0	1	1	0
37	28	1720	D100612	D100613	159	109	153	0
37	29	1721	D100707	D100718	1278	964	1307	583
37	30	1722	D100708	D100717	1174	1596	1820	1228
37	31	1723	D100709	D100716	0	0	0	0
37	32	1724	D100710	D100715	0	0	0	0
37	33	1725	D100711	D100714	0	0	0	0
37	34	1726	D100712	D100713	0	0	0	0
37	35	1727	D100700		0	0	0	0
37	36	1728	D100807		0	0	0	0
37	37	1729	D100808		0	0	0	0
37	38	1730	D100809		0	0	0	0
37	39	1731	D100810		0	0	0	0
37	44	1736	D100909		1102	1007	735	1030
37	45	1737	D100910		1109	1102	922	3715
38	30	1769	D100720		0	0	0	0
38	31	1770	D100721		0	0	0	0
38	32	1771	D100722		0	0	0	0
38	33	1772	D100723		0	0	0	0
38	34	1773	D100724		0	0	0	0
38	35	1774	D100700		0	0	0	0
38	36	1775	D100819		0	0	0	0
38	37	1776	D100820		0	0	0	0
38	38	1777	D100821		0	0	0	0
38	39	1778	D100822		0	0	0	0
38	40	1779	D100823		0	0	0	0

PINAL AMA MODEL PUMPAGE
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Model Row	Model Column	Model Cell	Cadastral Location #1	Cadastral Location #2	1985	1986	1987	1988
38	41	1780	D100824		0	0	0	0
38	42	1781	D100919		0	0	0	0
38	43	1782	D100920		0	0	0	0
38	44	1783	D100921	D100922	499	375	373	0
38	45	1784	D100923		2089	1665	1662	1661
38	46	1785	D100924		2882	2235	3002	5259

APPENDIX 7

ANNUAL RECHARGE PER CADASTRAL LOCATION

PINAL AMA MODEL RECHARGE
1985-1988
Ac-Ft

Model Row	Model Column	Model Cell	Cadastral Location #1	Cadastral Location #2	1985	1986	1987	1988
2	2	49	D040203	D040204	0	0	0	0
2	3	50	D040202	D040211	0	0	0	0
2	4	51	D040201	D040212	0	0	0	0
2	5	52	D040306	D040307	0	0	0	0
2	6	53	D040305	D040308	0	0	0	0
2	7	54	D040304	D040309	0	0	0	0
2	8	55	D040303	D040310	0	0	0	0
2	9	56	D040302	D040311	0	0	0	0
2	10	57	D040301	D040312	0	0	0	0
2	11	58	D040406	D040407	0	0	0	0
2	12	59	D040405	D040408	0	0	0	0
2	13	60	D040404	D040409	0	0	0	0
3	2	96	D040215	D040216	93	91	113	116
3	3	97	D040214		689	536	830	551
3	4	98	D040213		772	581	947	574
3	5	99	D040318		217	275	402	198
3	6	100	D040317		221	203	352	282
3	7	101	D040316		276	367	371	454
3	8	102	D040315		634	626	674	403
3	9	103	D040314		360	406	588	436
3	10	104	D040313		675	633	731	509
3	11	105	D040418		669	582	803	670
3	12	106	D040417		397	343	485	418
3	13	107	D040416		644	463	654	586
3	14	108	D040415		104	75	106	95
3	15	109	D040414		0	0	0	0
3	32	126	D040715		0	0	0	0
4	2	143	D040221	D040222	115	113	140	143
4	3	144	D040223		751	700	985	788
4	4	145	D040224		260	214	355	231
4	5	146	D040319		7	6	10	6
4	6	147	D040320		253	282	404	182
4	7	148	D040321		258	284	389	359
4	8	149	D040322		875	946	1080	593
4	9	150	D040323		295	463	730	307
4	10	151	D040324		980	923	867	575
4	11	152	D040419		808	707	942	789
4	12	153	D040420		552	477	674	582
4	13	154	D040421		394	273	376	343
4	14	155	D040422		220	203	268	171
4	15	156	D040423		28	29	37	21
4	16	157	D040424		0	0	0	0
4	32	173	D040722		2605	404	12	165
5	2	190	D040227	D040228	0	0	0	0
5	3	191	D040226		508	475	773	616
5	4	192	D040225		36	29	69	52
5	5	193	D040330		0	0	0	0

PINAL AMA MODEL RECHARGE
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Model Row	Model Column	Model Cell	Cadastral Location #1	Cadastral Location #2	1985	1986	1987	1988
5	6	194	D040329		423	491	557	268
5	7	195	D040328		381	456	558	290
5	8	196	D040327		818	703	801	265
5	9	197	D040326		661	699	881	489
5	10	198	D040325		694	623	621	437
5	11	199	D040430		558	584	730	717
5	12	200	D040429		869	711	943	1141
5	13	201	D040428		796	537	723	704
5	14	202	D040427		745	622	818	662
5	15	203	D040426		89	90	118	67
5	16	204	D040425		0	0	0	0
5	32	220	D040727		1354	210	7	86
6	2	237	D040233	D040234	128	109	126	110
6	3	238	D040235		440	376	433	381
6	4	239	D040236		34	29	33	29
6	5	240	D040331		0	0	0	0
6	6	241	D040332		0	0	0	0
6	7	242	D040333		250	293	396	181
6	8	243	D040334		485	525	616	397
6	9	244	D040335		733	667	737	599
6	10	245	D040336		717	561	769	575
6	11	246	D040431		557	596	742	752
6	12	247	D040432		670	321	520	553
6	13	248	D040433		766	486	666	627
6	14	249	D040434		633	581	762	504
6	15	250	D040435		83	84	109	62
6	16	251	D040436		0	0	0	0
6	31	266	D040733		0	0	0	0
6	32	267	D040734		0	0	0	0
7	2	284	D050203	D050204	26	22	100	368
7	3	285	D050202		341	309	396	289
7	4	286	D050201		25	23	28	15
7	5	287	D050306		0	0	0	0
7	6	288	D050305		0	0	0	0
7	7	289	D050304		0	0	0	0
7	8	290	D050303		756	624	672	547
7	9	291	D050302		569	428	506	424
7	10	292	D050301		394	353	402	366
7	11	293	D050406		468	242	388	371
7	12	294	D050405		431	128	138	214
7	13	295	D050404		405	402	342	289
7	14	296	D050403		499	420	532	463
7	15	297	D050402		17	17	22	13
7	16	298	D050401		0	0	0	0
7	31	313	D050704		0	0	0	0
7	32	314	D050703		0	0	0	0
8	2	331	D050203	D050204	120	73	203	216

PINAL AMA MODEL RECHARGE
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Model Row	Model Column	Model Cell	Cadastral Location #1	Cadastral Location #2	1985	1986	1987	1988
8	3	332	D050202		470	350	691	596
8	4	333	D050201		31	24	45	37
8	5	334	D050303		0	0	0	0
8	6	335	D050306		0	0	0	0
8	7	336	D050304		0	0	0	0
8	8	337	D050303		195	156	173	141
8	9	338	D050302		372	253	309	246
8	10	339	D050301		399	338	369	347
8	11	340	D050407		257	247	264	268
8	12	341	D050408		223	82	51	124
8	13	342	D050409		129	141	118	108
8	14	343	D050410		227	190	256	266
8	15	344	D050411		55	49	70	76
8	16	345	D050412		0	0	0	0
8	31	360	D050709		0	0	0	0
8	32	361	D050710		0	0	0	0
9	2	378	D050209	D050210	0	4	0	0
9	3	379	D050211		225	137	376	383
9	4	380	D050212		15	10	27	29
9	5	381	D050307		93	50	61	88
9	6	382	D050308		119	89	105	137
9	7	383	D050309		235	249	280	166
9	8	384	D050310		21	22	28	18
9	9	385	D050311		599	509	593	484
9	10	386	D050312		285	225	254	228
9	11	387	AK-CHIN		273	268	273	283
9	12	388	AK-CHIN		45	113	87	159
9	13	389	AK-CHIN		17	13	16	19
9	14	390	AK-CHIN		120	107	153	165
9	15	391	AK-CHIN		67	59	83	91
9	16	392	AK-CHIN		0	0	0	0
9	31	407	D050709		0	0	0	0
9	32	408	D050710		0	0	0	0
10	4	427	D050213		59	18	10	24
10	5	428	D050318		444	251	300	431
10	6	429	D050317		550	422	506	667
10	7	430	D050316		990	969	1123	745
10	8	431	D050315		90	80	107	75
10	9	432	D050314		531	512	583	482
10	10	433	D050313		295	284	324	267
10	11	434	AK-CHIN		191	184	210	173
10	12	435	AK-CHIN		189	183	208	172
10	13	436	AK-CHIN		187	181	206	170
10	14	437	AK-CHIN		192	183	209	173
10	15	438	AK-CHIN		1	1	0	1
10	16	439	AK-CHIN		0	0	0	0
10	17	440	D050518		0	0	0	0

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Model Row	Model Column	Model Cell	Cadastral Location #1	Cadastral Location #2	1985	1986	1987	1988
10	18	441	D050517		0	0	0	0
10	19	442	D050516		0	0	0	0
10	24	447	D050617		0	0	0	0
10	25	448	D050616		0	0	0	0
10	26	449	D050615		0	0	0	0
10	27	450	D050614		0	0	0	0
10	28	451	D050613		0	0	0	0
10	31	454	D050716		0	0	0	0
10	32	455	D050715		0	0	0	0
11	3	473	D050223		113	51	143	140
11	4	474	D050224		110	61	134	135
11	5	475	D050319		331	242	257	391
11	6	476	D050320		526	449	569	783
11	7	477	D050321		814	522	707	868
11	8	478	D050322		82	42	64	67
11	9	479	D050323		530	511	582	481
11	10	480	D050324		589	568	647	535
11	11	481	AK-CHIN		572	552	629	519
11	12	482	AK-CHIN		568	548	624	515
11	13	483	AK-CHIN		561	541	616	509
11	14	484	AK-CHIN		725	696	924	517
11	15	485	AK-CHIN		101	86	95	71
11	16	486	AK-CHIN		0	419	0	0
11	17	487	D050519		0	0	0	0
11	18	488	D050520		0	0	0	0
11	19	489	D050521		0	0	0	0
11	20	490	D050522		0	0	0	0
11	23	493	D050619		0	0	0	0
11	24	494	D050620		0	0	0	1
11	25	495	D050621		0	0	0	0
11	26	496	D050622		0	0	0	0
11	27	497	D050623		0	0	0	0
11	28	498	D050624		0	0	0	0
11	31	501	D050721		0	0	0	0
11	32	502	D050722		0	0	0	0
12	3	520	D050226		113	47	145	143
12	4	521	D050225		274	138	395	401
12	5	522	D050330		685	464	308	860
12	6	523	D050329		514	428	594	819
12	7	524	D050328		586	448	548	705
12	8	525	D050327		344	144	193	269
12	9	526	D050326		816	657	778	775
12	10	527	D050325		826	696	819	794
12	11	528	AK-CHIN		757	559	650	750
12	12	529	AK-CHIN		782	600	858	812
12	13	530	AK-CHIN		800	645	950	916
12	14	531	AK-CHIN		924	873	1534	1491

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Model Row	Model Column	Model Cell	Cadastral Location #1	Cadastral Location #2	1985	1986	1987	1988
12	15	532	AK-CHIN		438	411	749	842
12	16	533	AK-CHIN		0	0	0	0
12	17	534	D050530		0	0	0	0
12	18	535	D050529		0	0	0	0
12	19	536	D050528		0	0	0	0
12	20	537	D050527		0	0	0	0
12	21	538	D050526		0	0	0	0
12	22	539	D050525		0	0	0	0
12	23	540	D050630		0	0	0	0
12	24	541	D050629		0	0	0	0
12	25	542	D050628		0	0	0	0
12	26	543	D050627		163	137	169	167
12	27	544	D050626		22	18	22	22
12	28	545	D050625		0	0	0	0
12	31	548	D050728		133	226	212	240
12	32	549	D050727		623	666	740	649
13	2	566	D050233	D050234	0	0	0	0
13	3	567	D050235		0	0	0	0
13	4	568	D050236		157	149	357	393
13	5	569	D050331		369	710	433	980
13	6	570	D050332		660	30	524	467
13	7	571	D050333		327	171	318	252
13	8	572	D050334		441	176	230	339
13	9	573	D050335		605	336	421	478
13	10	574	D050336		603	347	447	506
13	11	575	AK-CHIN		408	199	233	446
13	12	576	AK-CHIN		225	12	26	271
13	13	577	AK-CHIN		890	306	587	697
13	14	578	AK-CHIN		376	330	655	769
13	15	579	AK-CHIN		281	256	843	1162
13	16	580	AK-CHIN		8	8	23	30
13	17	581	D050531		49	67	79	0
13	18	582	D050532		0	0	0	0
13	19	583	D050533		0	0	0	0
13	20	584	D050534		0	0	0	0
13	21	585	D050535		0	0	0	0
13	22	586	D050536		0	0	0	0
13	23	587	D050631		0	0	0	0
13	24	588	D050632		0	0	0	0
13	25	589	D050633		0	0	0	0
13	26	590	D050634		8	7	9	9
13	27	591	D050635		1	1	1	1
13	28	592	D050636		0	0	0	0
13	29	593	D050731		0	0	0	0
13	31	595	D050733		71	56	101	70
13	32	596	D050734		627	545	766	668
14	2	613	D060203	D060204	12	3	7	5

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Model Row	Model Column	Model Cell	Cadastral Location #1	Cadastral Location #2	1985	1986	1987	1988
14	3	614	D060202		0	0	0	0
14	4	615	D060201		246	278	219	228
14	5	616	D060300		269	283	184	553
14	6	617	D060306		383	253	308	474
14	7	618	D060305		466	326	483	381
14	8	619	D060304		254	234	144	395
14	9	620	D060303		437	165	228	322
14	10	621	D060302		445	173	230	410
14	11	622	D060301		191	4	9	245
14	12	623	D060406		432	98	428	406
14	13	624	D060405		463	112	360	606
14	14	625	D060404		227	58	191	318
14	15	626	D060403		522	181	401	371
14	16	627	D060402		3	8	8	70
14	17	628	D060501		21	57	61	40
14	18	629	D060506		0	0	0	0
14	19	630	D060505		0	0	0	0
14	20	631	D060504		0	0	0	0
14	21	632	D060503		0	0	0	0
14	22	633	D060502		0	0	0	0
14	23	634	D060601		0	0	0	0
14	24	635	D060606		0	0	0	0
14	25	636	D060605		193	179	166	149
14	26	637	D060604		122	104	125	123
14	27	638	D060603		13	11	13	13
14	28	639	D060602		0	0	0	0
14	29	640	D060701		0	0	0	0
14	30	641	D060706		107	57	70	47
14	31	642	D060705		20	18	15	23
14	32	643	D060704		275	300	396	332
14	33	644	D060703		98	58	70	59
14	34	645	D060702		415	246	322	263
14	35	646	D060801		609	358	278	277
14	36	647	D060806		490	224	379	317
14	37	648	D060805		420	334	366	279
14	38	649	D060804		539	585	528	412
14	39	650	D060803		493	485	771	674
14	40	651	D060802		797	291	304	411
14	41	652	D060901		1387	1385	1475	1454
14	42	653	D060906		2937	3778	3030	3682
14	43	654	D060905		0	0	0	0
14	44	655	D060904		328	3	6	0
14	45	656	D060902	D060903	0	0	0	0
14	46	657	D060901		0	0	0	0
15	2	660	D060209	D0602010	0	0	0	0
15	3	661	D060211		0	0	0	0
15	4	662	D060212		314	120	164	109

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Model Row	Model Column	Model Cell	Cadastral Location #1	Cadastral Location #2	1985	1986	1987	1988
15	5	663	D060300		621	239	325	221
15	6	664	D060307		399	239	248	655
15	7	665	D060308		346	260	364	354
15	8	666	D060309		239	222	136	375
15	9	667	D060310		414	156	216	306
15	10	668	D060311		403	200	330	344
15	11	669	D060312		451	503	464	476
15	12	670	D060407		473	259	504	668
15	13	671	D060408		432	173	396	485
15	14	672	D060409		429	103	337	572
15	15	673	D060410		478	162	350	312
15	16	674	D060411		476	162	350	315
15	17	675	D060512		10	29	30	22
15	18	676	D060507		0	0	0	0
15	19	677	D060508		0	0	0	0
15	20	678	D060509		4	6	11	5
15	21	679	D060510		194	265	478	206
15	22	680	D060511		94	183	197	162
15	23	681	D060512		207	65	86	43
15	24	682	D060607		157	52	45	34
15	25	683	D060608		191	160	105	187
15	26	684	D060609		115	98	64	115
15	27	685	D060610		10	6	4	7
15	28	686	D060611		224	212	193	138
15	29	687	D060612		253	86	366	132
15	30	688	D060707		371	197	241	164
15	31	689	D060708		334	317	212	404
15	32	690	D060709		158	103	155	170
15	33	691	D060710		869	575	944	803
15	34	692	D060711		401	244	372	316
15	35	693	D060712		716	344	397	356
15	36	694	D060807		1451	1250	1283	1341
15	37	695	D060808		203	43	244	183
15	38	696	D060809		537	507	606	629
15	39	697	D060810		536	209	260	311
15	40	698	D060811		706	236	254	360
15	41	699	D060812		1334	1288	1330	1275
15	42	700	D060907		2572	3505	2625	3346
15	43	701	D060908		0	0	0	0
15	44	702	D060909		0	0	0	0
15	45	703	D060910	D060911	0	0	0	0
15	46	704	D060912		0	0	0	0
16	3	708	D060214		0	0	0	0
16	4	709	D060213		68	26	35	23
16	5	710	D060200		135	52	71	48
16	6	711	D060318		483	314	375	376
16	7	712	D060317		277	256	322	436

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Model Row	Model Column	Model Cell	Cadastral Location #1	Cadastral Location #2	1985	1986	1987	1988
16	8	713	D060316		158	153	120	485
16	9	714	D060315		417	158	217	308
16	10	715	D060314		228	88	123	170
16	11	716	D060313		442	413	438	517
16	12	717	D060418		454	239	557	333
16	13	718	D060417		382	245	460	347
16	14	719	D060416		439	105	345	586
16	15	720	D060415		499	169	366	326
16	16	721	D060414		496	168	364	324
16	17	722	D060513		0	0	0	0
16	18	723	D060518		0	0	0	0
16	19	724	D060517		0	0	0	0
16	20	725	D060516		5	5	8	5
16	21	726	D060515		446	499	818	407
16	22	727	D060514		409	371	477	293
16	23	728	D060513		904	935	904	1010
16	24	729	D060618		776	775	685	785
16	25	730	D060617		27	23	15	27
16	26	731	D060616		638	636	686	635
16	27	732	D060615		229	128	491	738
16	28	733	D060614		548	446	547	463
16	29	734	D060713		461	434	526	391
16	30	735	D060718		532	419	553	432
16	31	736	D060717		303	160	242	341
16	32	737	D060716		538	341	517	575
16	33	738	D060715		1619	1400	1647	1729
16	34	739	D060714		385	316	442	330
16	35	740	D060713		528	419	303	290
16	36	741	D060818		1611	1520	1565	1698
16	37	742	D060817		375	176	225	297
16	38	743	D060816		303	297	329	366
16	39	744	D060815		196	67	63	137
16	40	745	D060814		219	75	69	150
16	41	746	D060813		1240	1228	1206	1267
16	42	747	D060918		1869	2663	1910	2542
16	43	748	D060917		0	0	0	0
16	44	749	D060916		0	0	0	0
16	45	750	D060915	D060914	0	0	0	0
16	46	751	D060913		0	0	0	0
17	3	755	D060223		0	0	0	0
17	4	756	D060224		0	0	0	0
17	5	757	D060200		1	1	1	1
17	6	758	D060319		148	128	154	123
17	7	759	D060320		250	216	260	210
17	8	760	D060321		33	15	18	34
17	9	761	D060322		418	158	218	308
17	10	762	D060323		432	163	225	320

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Model Row	Model Column	Model Cell	Cadastral Location #1	Cadastral Location #2	1985	1986	1987	1988
17	11	763	D060324		428	255	354	511
17	12	764	D060419		470	424	462	390
17	13	765	D060420		287	168	226	280
17	14	766	D060421		423	239	232	499
17	15	767	D060422		438	84	80	283
17	16	768	D060423		74	63	101	76
17	17	769	D060424		0	0	0	0
17	18	770	D060519		0	0	0	0
17	19	771	D060520		0	0	0	0
17	20	772	D060521		2	3	4	3
17	21	773	D060522		423	397	663	414
17	22	774	D060523		994	1249	1234	1088
17	23	775	D060524		859	879	844	862
17	24	776	D060619		860	746	889	960
17	25	777	D060620		0	0	0	0
17	26	778	D060621		6	6	7	6
17	27	779	D060622		265	236	259	218
17	28	780	D060623		435	492	580	486
17	29	781	D060624		973	559	940	764
17	30	782	D060719		902	711	899	640
17	31	783	D060720		1108	877	1135	976
17	32	784	D060721		1085	770	1070	1049
17	33	785	D060722		1445	1335	1486	1580
17	34	786	D060723		1534	1254	1534	1490
17	35	787	D060724		379	297	136	11
17	36	788	D060819		1623	1279	1133	1335
17	37	789	D060820		231	116	150	172
17	38	790	D060821		507	358	554	499
17	39	791	D060822		1535	1206	1024	1352
17	40	792	D060823		756	259	269	490
17	41	793	D060824		1032	870	789	929
17	42	794	D060919		1687	2599	1834	2432
17	43	795	D060920		0	0	0	0
17	44	796	D060921		0	0	0	0
17	45	797	D060923		0	0	0	0
17	46	798	D060924		0	0	0	0
18	7	806	D060329		0	0	0	0
18	8	807	D060328		21	11	7	10
18	9	808	D060327		321	164	100	145
18	10	809	D060326		450	173	237	338
18	11	810	D060325		425	244	397	644
18	12	811	D060430		388	226	365	591
18	13	812	D060429		313	188	160	299
18	14	813	D060428		484	317	308	319
18	15	814	D060427		279	178	119	254
18	16	815	D060426		125	122	191	137
18	17	816	D060425		114	111	174	124

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Model Row	Model Column	Model Cell	Cadastral Location #1	Cadastral Location #2	1985	1986	1987	1988
18	18	817	D060530		287	187	338	317
18	19	818	D060529		0	0	0	0
18	20	819	D060528		0	0	0	0
18	21	820	D060527		151	470	260	186
18	22	821	D060526		486	528	485	397
18	23	822	D060525		1208	1165	1112	1084
18	24	823	D060630		1146	1170	1073	1026
18	25	824	D060629		863	851	779	856
18	26	825	D060628		942	980	1082	980
18	27	826	D060627		1148	1116	1048	1114
18	28	827	D060626		522	493	764	601
18	29	828	D060625		1075	1345	1074	1399
18	30	829	D060730		1281	1290	1284	1247
18	31	830	D060729		1381	1382	1649	1331
18	32	831	D060728		1288	1163	1663	1583
18	33	832	D060727		1415	1315	1475	1458
18	34	833	D060726		1694	1448	1727	1600
18	35	834	D060725		1279	1228	1222	1234
18	36	835	D060830		1271	1188	1226	1275
18	37	836	D060829		1560	1426	1438	1423
18	38	837	D060828		1427	1267	1221	1290
18	39	838	D060827		1419	1173	1085	1288
18	40	839	D060826		2466	3555	3129	2921
18	41	840	D060825		2838	4004	3488	3051
18	42	841	D060930		926	923	809	927
18	43	842	D060929		0	0	0	0
18	44	843	D060928		0	0	0	0
18	45	844	D060927	D060926	0	0	0	0
18	46	845	D060925		150	51	62	88
19	5	851	D060200		0	0	0	0
19	6	852	D060331		0	0	0	0
19	7	853	D060332		0	0	0	0
19	8	854	D060333		9	6	3	4
19	9	855	D060334		162	110	54	66
19	10	856	D060335		342	131	177	251
19	11	857	D060336		351	183	119	177
19	12	858	D060431		520	445	400	628
19	13	859	D060432		627	552	563	743
19	14	860	D060433		428	245	371	495
19	15	861	D060434		640	389	297	450
19	16	862	D060435		136	104	119	202
19	17	863	D060436		16	7	15	19
19	18	864	D060531		743	335	717	817
19	19	865	D060532		0	0	0	0
19	20	866	D060533		0	0	0	0
19	21	867	D060534		8	7	19	23
19	22	868	D060535		152	135	132	69

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Model Row	Model Column	Model Cell	Cadastral Location #1	Cadastral Location #2	1985	1986	1987	1988
19	23	869	D060536		1388	1244	1279	1054
19	24	870	D060631		1223	1260	1235	1099
19	25	871	D060632		1270	1270	1407	1161
19	26	872	D060633		1351	1147	1308	1183
19	27	873	D060634		970	974	981	941
19	28	874	D060635		953	1245	1413	1261
19	29	875	D060636		1077	1262	1151	1285
19	30	876	D060731		1294	1329	1358	1304
19	31	877	D060732		845	1169	1373	1313
19	32	878	D060733		1126	1108	1562	1578
19	33	879	D060734		1310	1236	1810	1654
19	34	880	D060735		1628	1479	1684	1649
19	35	881	D060736		892	895	765	891
19	36	882	D060831		962	934	820	942
19	37	883	D060832		1213	1239	1181	1220
19	38	884	D060833		1399	1400	1315	1299
19	39	885	D060834		1281	1089	919	1133
19	40	886	D060835		2461	3462	3037	2950
19	41	887	D060836		2286	3409	2961	2780
19	42	888	D060931		919	916	802	924
19	43	889	D060932		0	0	0	0
19	44	890	D060933		0	0	0	0
19	45	891	D060934	D060935	0	0	0	0
20	5	898	D070306		0	0	0	0
20	6	899	D070305		0	0	0	0
20	7	900	D070304		0	0	0	0
20	8	901	D070303		0	0	0	0
20	9	902	D070302		4	3	1	2
20	10	903	D070301		8	3	14	15
20	11	904	D070406		23	13	385	364
20	12	905	D070405		311	193	179	315
20	13	906	D070404		184	205	404	445
20	14	907	D070403		446	191	299	500
20	15	908	D070402		661	438	419	511
20	16	909	D070401		388	162	270	550
20	17	910	D070400		18	5	8	20
20	18	911	D070506		29	13	28	32
20	19	912	D070505		0	0	0	0
20	20	913	D070504		0	0	0	0
20	21	914	D070503		0	0	0	0
20	22	915	D070502		0	0	0	0
20	23	916	D070601		991	989	914	947
20	24	917	D070606		1268	1201	1237	1085
20	25	918	D070605		1333	1202	1430	1214
20	26	919	D070604		1259	1222	1299	1126
20	27	920	D070603		1213	1099	1139	1029
20	28	921	D070602		1075	1084	1214	1097

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Model Row	Model Column	Model Cell	Cadastral Location #1	Cadastral Location #2	1985	1986	1987	1988
20	29	922	D070701		1115	980	1178	1132
20	30	923	D070706		834	962	1092	1000
20	31	924	D070705		978	926	922	982
20	32	925	D070704		9	8	22	17
20	33	926	D070703		10	9	22	17
20	34	927	D070702		15	14	19	17
20	35	928	D070701		238	144	200	287
20	36	929	D070806		288	122	122	121
20	37	930	D070805		259	170	281	273
20	38	931	D070804		402	230	344	340
20	39	932	D070803		625	23	483	478
20	40	933	D070802		933	918	811	936
20	41	934	D070801		3205	4325	3763	3704
20	42	935	D070906		919	916	802	924
20	43	936	D070905		0	0	0	0
20	44	937	D070904		0	0	0	0
20	45	938	D070903	D070902	0	0	0	0
21	5	945	D070307		0	0	0	0
21	6	946	D070308		0	0	0	0
21	7	947	D070309		0	0	0	0
21	8	948	D070310		0	0	0	0
21	9	949	D070311		0	0	0	0
21	10	950	D070312		0	0	0	0
21	11	951	D070407		3	4	5	7
21	12	952	D070408		65	69	106	132
21	13	953	D070409		12	9	25	29
21	14	954	D070410		149	132	266	296
21	15	955	D070411		325	206	366	487
21	16	956	D070412		231	76	177	610
21	17	957	D070400		279	11	28	344
21	18	958	D070507		0	0	0	0
21	19	959	D070508		0	0	0	0
21	20	960	D070509		0	0	0	209
21	21	961	D070510		0	0	0	156
21	22	962	D070511		0	0	0	0
21	23	963	D070512		8	8	6	4
21	24	964	D070607		6	4	6	3
21	25	965	D070608		14	6	18	14
21	26	966	D070609		12	10	11	9
21	29	969	D070612		20	127	142	112
21	30	970	D070707		11	85	95	74
21	31	971	D070708		0	0	0	0
21	32	972	D070709		0	0	0	0
21	33	973	D070710		0	0	0	0
21	34	974	D070711		177	53	107	220
21	35	975	D070712		143	20	69	126
21	36	976	D070807		4	3	11	9

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Model Row	Model Column	Model Cell	Cadastral Location #1	Cadastral Location #2	1985	1986	1987	1988
21	37	977	D070808		62	58	122	663
21	38	978	D070809		63	59	124	679
21	39	979	D070810		677	0	336	343
21	40	980	D070811		20	0	5	5
21	41	981	D070812		0	0	0	0
21	42	982	D070907		0	0	0	0
21	43	983	D070908		0	0	0	0
21	44	984	D070909		0	0	0	0
21	45	985	D070910	D070911	0	0	0	0
22	7	994	D070316		0	0	0	0
22	8	995	D070315		0	0	0	0
22	9	996	D070314		0	0	0	0
22	10	997	D070313		0	0	0	0
22	11	998	D070418		6	6	8	11
22	12	999	D070417		122	115	169	230
22	13	1000	D070416		25	18	64	73
22	14	1001	D070415		37	13	78	98
22	15	1002	D070414		410	246	431	376
22	16	1003	D070413		268	115	4	14
22	17	1004	D070400		115	38	92	315
22	18	1005	D070518		37	0	0	0
22	19	1006	D070517		0	0	0	121
22	20	1007	D070516		0	0	0	456
22	21	1008	D070515		0	0	0	176
22	22	1009	D070514		0	0	0	0
22	23	1010	D070613		0	0	0	0
22	24	1011	D070518		0	0	0	0
22	25	1012	D070617		0	0	0	0
22	26	1013	D070616		0	0	0	0
22	29	1016	D070613		0	0	0	0
22	30	1017	D070718		0	0	0	0
22	31	1018	D070717		0	0	0	0
22	32	1019	D070716		0	0	0	0
22	33	1020	D070715		0	0	0	0
22	34	1021	D070714		106	110	125	303
22	35	1022	D070713		178	167	522	295
22	36	1023	D070818		559	387	690	549
22	37	1024	D070817		35	33	69	375
22	38	1025	D070816		66	64	132	676
22	39	1026	D070815		313	0	11	1
22	40	1027	D070814		218	0	7	0
22	41	1028	D070813		0	0	0	0
22	42	1029	D070918		0	0	0	0
22	43	1030	D070917		0	0	0	0
22	44	1031	D070916		0	0	0	0
22	45	1032	D070915	D070914	0	0	0	0
23	8	1042	D070322		0	0	0	0

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Model Row	Model Column	Model Cell	Cadastral Location #1	Cadastral Location #2	1985	1986	1987	1988
23	9	1043	D070323		0	0	0	0
23	10	1044	D070324		0	0	0	0
23	11	1045	D070419		0	0	0	0
23	12	1046	D070420		0	0	0	0
23	13	1047	D070421		0	0	0	0
23	14	1048	D070422		0	0	0	28
23	15	1049	D070423		324	206	768	243
23	16	1050	D070424		0	0	0	62
23	17	1051	D070400		0	0	0	156
23	18	1052	D070519		0	0	0	0
23	19	1053	D070520		0	0	0	4
23	20	1054	D070521		0	0	0	344
23	21	1055	D070522		0	0	0	3
23	22	1056	D070523		0	0	0	0
23	23	1057	D070524		0	0	0	0
23	24	1058	D070619		0	0	0	0
23	25	1059	D070620		0	0	0	0
23	26	1060	D070621		194	155	214	172
23	29	1063	D070724		0	0	0	0
23	30	1064	D070719		0	0	0	0
23	31	1065	D070720		0	0	0	0
23	32	1066	D070721		0	0	0	0
23	33	1067	D070722		0	0	0	0
23	34	1068	D070723		183	194	361	305
23	35	1069	D070624		22	22	24	30
23	36	1070	D070819		570	568	659	531
23	37	1071	D070820		0	0	0	0
23	38	1072	D070821		111	136	345	353
23	39	1073	D070822		296	0	10	0
23	40	1074	D070823		71	11	2	16
23	41	1075	D070824		0	0	0	0
23	42	1076	D070919		0	0	0	0
23	43	1077	D070920		0	0	0	0
23	44	1078	D070921		0	0	0	0
23	45	1079	D070922	D070923	0	0	0	0
24	8	1089	D070327		0	0	0	0
24	9	1090	D070326		0	0	0	0
24	10	1091	D070325		0	0	0	0
24	11	1092	D070430		0	0	0	0
24	12	1093	D070429		0	0	0	0
24	13	1094	D070428		0	0	0	0
24	14	1095	D070427		0	0	0	1
24	15	1096	D070426		0	0	0	41
24	16	1097	D070425		0	0	0	129
24	17	1098	D070400		0	0	0	301
24	18	1099	D070530		0	0	0	0
24	19	1100	D070529		0	0	0	0

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Model Row	Model Column	Model Cell	Cadastral Location #1	Cadastral Location #2	1985	1986	1987	1988
24	20	1101	D070528		0	0	0	1
24	21	1102	D070527		0	0	0	0
24	22	1103	D070526		0	0	0	0
24	23	1104	D070525		0	0	0	0
24	24	1105	D070630		0	0	0	0
24	25	1106	D070629		476	452	518	479
24	26	1107	D070628		703	586	854	619
24	27	1108	D070627		604	476	636	539
24	29	1110	D070625		1	1	1	1
24	30	1111	D070730		1	2	2	2
24	31	1112	D070729		0	0	0	0
24	32	1113	D070728		0	0	0	0
24	33	1114	D070727		0	0	0	0
24	34	1115	D070726		0	0	0	0
24	35	1116	D070725		43	43	48	61
24	36	1117	D070830		377	353	382	362
24	37	1118	D070829		7	5	5	4
24	38	1119	D070828		245	162	251	251
24	39	1120	D070827		313	15	41	16
24	40	1121	D070826		203	178	19	258
24	41	1122	D070825		0	0	0	0
24	42	1123	D070930		0	0	0	0
24	43	1124	D070929		0	0	0	0
24	44	1125	D070928		0	0	0	0
24	45	1126	D070927	D070926	0	0	0	0
25	12	1140	D070432		0	0	0	0
25	13	1141	D070433		0	0	0	0
25	14	1142	D070434		0	0	0	0
25	15	1143	D070435		0	0	0	0
25	16	1144	D070436		0	0	0	0
25	17	1145	D070400		0	0	0	0
25	18	1146	D070531		0	0	0	0
25	19	1147	D070532		0	0	0	0
25	20	1148	D070533		0	0	0	0
25	21	1149	D070534		0	0	0	0
25	22	1150	D070535		0	0	0	0
25	23	1151	D070536		0	0	0	0
25	24	1152	D070631		0	0	0	0
25	25	1153	D070632		1	1	1	2
25	26	1154	D070633		260	194	798	706
25	27	1155	D070634		744	594	824	668
25	28	1156	D070635		424	327	421	381
25	29	1157	D070636		462	404	426	474
25	30	1158	D070731		716	785	912	792
25	31	1159	D070732		350	384	446	388
25	32	1160	D070733		0	0	0	0
25	33	1161	D070734		0	0	0	0

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Model Row	Model Column	Model Cell	Cadastral Location #1	Cadastral Location #2	1985	1986	1987	1988
25	34	1162	D070735		0	0	62	345
25	35	1163	D070736		0	0	0	0
25	36	1164	D070831		403	183	170	137
25	37	1165	D070832		254	190	177	143
25	38	1166	D070833		483	535	689	583
25	39	1167	D070834		467	340	689	363
25	40	1168	D070835		253	184	374	198
25	41	1169	D070836		379	364	515	375
25	42	1170	D070931		0	0	0	0
25	43	1171	D070932		0	0	0	0
25	44	1172	D070933		0	0	0	0
26	13	1188	D080404		0	0	0	0
26	14	1189	D080403		0	0	0	0
26	15	1190	D080402		0	0	0	0
26	16	1191	D080401		0	0	0	0
26	17	1192	D080506		0	0	0	0
26	18	1193	D080505		0	0	0	0
26	19	1194	D080504		0	0	0	0
26	20	1195	D080503		0	0	0	0
26	21	1196	D080502		0	0	0	0
26	22	1197	D080501		0	0	0	0
26	23	1198	D080500		0	0	0	0
26	24	1199	D080606		0	0	0	0
26	25	1200	D080605		0	0	0	0
26	26	1201	D080604		4	3	12	11
26	27	1202	D080603		633	615	741	718
26	28	1203	D080602		5	4	5	6
26	29	1204	D080601		11	10	11	12
26	30	1205	D080706		14	16	18	16
26	31	1206	D080705		15	17	20	17
26	32	1207	D080704		0	0	0	0
26	33	1208	D080703		0	0	0	0
26	34	1209	D080702		1	0	2	7
26	35	1210	D080701		36	17	26	0
26	36	1211	D080806		4	3	3	2
26	37	1212	D080805		277	268	377	103
26	38	1213	D080804		523	508	716	198
26	39	1214	D080803		563	465	536	416
26	40	1215	D080802		18	10	17	12
26	41	1216	D080801		709	494	681	456
26	42	1217	D080906		0	0	0	0
26	43	1218	D080905		0	0	0	0
27	14	1236	D080410		0	0	0	0
27	15	1237	D080411		0	0	0	0
27	16	1238	D080412		0	0	0	0
27	17	1239	D080507		0	0	0	0
27	18	1240	D080508		0	0	0	0

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Model Row	Model Column	Model Cell	Cadastral Location #1	Cadastral Location #2	1985	1986	1987	1988
27	19	1241	D080509		0	0	0	0
27	20	1242	D080510		0	0	0	0
27	21	1243	D080511		0	0	0	0
27	22	1244	D080512		0	0	0	0
27	24	1246	D080607		0	0	0	0
27	25	1247	D080608		0	0	0	0
27	26	1248	D080609		327	396	509	509
27	27	1249	D080610		383	375	450	437
27	28	1250	D080611		651	625	800	416
27	29	1251	D080612		0	0	0	0
27	30	1252	D080707		0	0	0	0
27	31	1253	D080708		0	0	0	0
27	32	1254	D080709		0	0	0	0
27	33	1255	D080710		56	44	59	39
27	34	1256	D080711		206	163	219	146
27	35	1257	D080712		4	2	3	0
27	36	1258	D080807		116	45	64	19
27	37	1259	D080808		501	366	449	349
27	38	1260	D080809		406	365	564	275
27	39	1261	D080810		277	282	520	267
27	40	1262	D080811		447	929	430	336
27	41	1263	D080812		751	304	1242	1033
27	42	1264	D080907		670	681	937	686
27	43	1265	D080908		0	0	0	0
28	14	1283	D080415		0	0	0	0
28	15	1284	D080414		0	0	0	0
28	16	1285	D080413		0	0	0	0
28	17	1286	D080518		0	0	0	0
28	18	1287	D080517		0	0	0	0
28	19	1288	D080516		0	0	0	0
28	20	1289	D080515		0	0	0	0
28	21	1290	D080514		0	0	0	0
28	25	1294	D080617		0	0	0	0
28	26	1295	D080616		47	46	55	53
28	27	1296	D080615		9	0	15	12
28	28	1297	D080614		49	39	64	37
28	29	1298	D080613		0	0	0	0
28	30	1299	D080718		0	0	10	7
28	31	1300	D080717		0	0	63	48
28	32	1301	D080716		0	0	0	0
28	33	1302	D080715		4	3	4	6
28	34	1303	D080714		13	10	16	108
28	35	1304	D080713		231	166	313	210
28	36	1305	D080818		591	424	516	419
28	37	1306	D080817		279	204	248	197
28	38	1307	D080816		787	751	879	513
28	39	1308	D080815		117	105	161	98

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Model Row	Model Column	Model Cell	Cadastral Location #1	Cadastral Location #2	1985	1986	1987	1988
28	40	1309	D080814		371	348	520	331
28	41	1310	D080813		331	351	566	354
28	42	1311	D080918		514	523	720	527
28	43	1312	D080917		0	0	0	0
29	17	1333	D080519		0	0	0	0
29	18	1334	D080520		0	0	0	0
29	19	1335	D080521		0	0	0	0
29	20	1336	D080522		0	0	0	0
29	23	1339	D080524		0	0	0	0
29	24	1340	D080619		0	0	0	0
29	25	1341	D080620		0	0	0	0
29	26	1342	D080621		9	0	15	12
29	27	1343	D080622		19	0	31	25
29	28	1344	D080623		19	0	31	26
29	29	1345	D080724		0	0	0	0
29	30	1346	D080719		0	0	1	0
29	31	1347	D080720		14	16	20	15
29	32	1348	D080721		209	237	245	186
29	33	1349	D080722		187	212	218	167
29	34	1350	D080723		163	149	128	155
29	35	1351	D080724		611	439	447	354
29	36	1352	D080819		259	114	103	172
29	37	1353	D080820		546	392	477	388
29	38	1354	D080821		61	58	68	40
29	39	1355	D080822		504	481	562	328
29	40	1356	D080823		78	67	99	53
29	41	1357	D080525		193	96	432	259
29	42	1358	D080919		0	0	0	1
29	43	1359	D080920		0	0	0	0
30	23	1386	D080625		0	0	0	0
30	24	1387	D080630		0	0	0	0
30	25	1388	D080629		0	0	0	0
30	26	1389	D080628		3	2	4	3
30	27	1390	D080627		341	347	494	372
30	28	1391	D080626		390	383	557	381
30	29	1392	D080625		8	0	13	11
30	30	1393	D080730		6	7	7	5
30	31	1394	D080729		153	174	180	136
30	32	1395	D080728		117	131	138	105
30	33	1396	D080727		217	240	247	188
30	34	1397	D080726		239	272	259	220
30	35	1398	D080725		230	253	262	199
30	36	1399	D080830		532	390	469	382
30	37	1400	D080829		545	364	381	281
30	38	1401	D080828		332	293	540	448
30	39	1402	D080827		459	443	513	299
30	40	1403	D080826		0	0	0	0

PINAL AMA MODEL RECHARGE
1985-1988
Ac-Ft

Model Row	Model Column	Model Cell	Cadastral Location #1	Cadastral Location #2	1985	1986	1987	1988
30	41	1404	D080825		245	220	131	223
30	42	1405	D080930		0	0	0	0
30	43	1406	D080929		0	0	0	0
31	23	1433	D080536		0	0	0	0
31	24	1434	D080631		0	0	0	0
31	25	1435	D080632		0	0	0	0
31	26	1436	D080633		0	0	0	0
31	27	1437	D080634		221	237	257	144
31	28	1438	D080635		411	439	474	263
31	29	1439	D080636		1	0	1	1
31	30	1440	D080731		6	1	1	1
31	31	1441	D080732		125	19	20	15
31	32	1442	D080733		190	131	133	115
31	33	1443	D080734		268	317	365	211
31	34	1444	D080735		230	251	398	315
31	35	1445	D080736		235	132	284	214
31	36	1446	D080831		143	43	89	274
31	37	1447	D080832		254	177	244	292
31	38	1448	D080833		555	438	618	519
31	39	1449	D080834		7	7	8	5
31	40	1450	D080835		0	0	0	0
31	41	1451	D080836		0	0	0	0
31	42	1452	D080931		0	0	0	0
31	43	1453	D080932		0	0	0	0
31	44	1454	D080933		0	0	0	0
32	24	1481	D090605		0	0	0	0
32	25	1482	D090604		0	0	0	0
32	26	1483	D090603		0	0	0	0
32	27	1484	D090602		18	26	38	34
32	28	1485	D090601		33	49	70	63
32	29	1486	D090600		0	0	0	0
32	30	1487	D090706		3	4	1	3
32	31	1488	D090705		69	58	27	36
32	32	1489	D090704		115	26	41	26
32	33	1490	D090703		288	264	465	267
32	34	1491	D090702		203	203	305	177
32	35	1492	D090701		341	274	458	259
32	36	1493	D090806		234	260	271	215
32	37	1494	D090805		312	305	450	369
32	38	1495	D090804		317	276	517	434
32	39	1496	D090803		0	0	0	0
32	40	1497	D090802		0	0	0	0
32	41	1498	D090801		0	0	0	0
32	42	1499	D090906		0	0	0	0
32	43	1500	D090905		0	0	0	0
32	44	1501	D090904		0	0	0	0
33	27	1531	D090611	D090614	0	0	0	0

PINAL AMA MODEL RECHARGE
1985-1988
Ac-Ft

Model Row	Model Column	Model Cell	Cadastral Location #1	Cadastral Location #2	1985	1986	1987	1988
33	28	1532	D090612	D090613	22	14	25	0
33	29	1533	D090600	D090600	303	201	337	10
33	30	1534	D090707		221	230	99	146
33	31	1535	D090708		492	331	548	29
33	32	1536	D090709		229	218	227	196
33	33	1537	D090710		16	16	28	22
33	34	1538	D090711		306	297	312	279
33	35	1539	D090712		304	298	313	279
33	36	1540	D090807		591	497	720	469
33	37	1541	D090808		295	310	363	278
33	38	1542	D090809		500	441	781	631
33	39	1543	D090810		148	152	104	66
33	40	1544	D090811		0	0	0	0
33	41	1545	D090812		0	0	0	0
33	42	1546	D090907		0	0	0	0
33	43	1547	D090908		0	0	0	0
34	29	1580	D090600		529	347	607	26
34	30	1581	D090719	D090718	584	437	691	214
34	31	1582	D090717	D090720	777	490	872	271
34	32	1583	D090716	D090721	482	534	736	351
34	33	1584	D090715	D090722	624	395	425	340
34	34	1585	D090714	D090723	494	496	613	437
34	35	1586	D090713	D090724	541	553	664	505
34	36	1587	D090818	D090819	615	676	791	606
34	37	1588	D090817	D090820	383	311	483	328
34	38	1589	D090816	D090821	216	193	223	86
34	39	1590	D090815	D090822	444	339	354	266
34	40	1591	D090814	D090823	153	181	197	174
34	41	1592	D090813	D090324	0	0	0	0
34	42	1593	D090918	D090919	0	0	0	0
34	43	1594	D090917	D090920	0	0	0	0
34	28	1579	D090625	D090636	0	0	0	0
35	29	1627	D090600	D090600	507	479	569	536
35	30	1628	D090730		349	298	363	330
35	31	1629	D090729		781	589	802	595
35	32	1630	D090728		629	608	748	616
35	33	1631	D090727		628	589	662	602
35	34	1632	D090726		372	343	456	261
35	35	1633	D090725		322	297	417	211
35	36	1634	D090830		732	515	667	483
35	37	1635	D090829		327	250	326	279
35	38	1636	D090828		0	0	151	103
35	39	1637	D090827		112	68	223	190
35	40	1638	D090826		943	663	672	538
35	41	1639	D090825		768	925	911	636
35	42	1640	D090930		129	199	259	176
35	43	1641	D090929		0	0	0	0

PINAL AMA MODEL RECHARGE
1985-1988
Ac-Ft

Model Row	Model Column	Model Cell	Cadastral Location #1	Cadastral Location #2	1985	1986	1987	1988
35	44	1642	D090928		0	0	0	0
35	45	1643	D090927		0	0	0	0
36	27	1672	D100602		6	23	36	16
36	28	1673	D100601		232	444	546	340
36	29	1674	D100706		797	746	767	765
36	30	1675	D100605	D100631	277	357	425	308
36	31	1676	D100604	D100632	0	0	0	0
36	32	1677	D100703	D100733	0	0	0	0
36	33	1678	D100702	D100734	43	40	45	35
36	34	1679	D100701	D100735	408	474	427	380
36	35	1680	D100800	D100736	373	466	476	368
36	36	1681	D100806	D100831	48	49	98	14
36	37	1682	D100805	D100832	183	214	149	160
36	38	1683	D100804	D100833	0	0	89	66
36	39	1684	D100803	D100834	0	0	84	55
36	40	1685	D100802	D100835	41	40	124	86
36	41	1686	D100901	D100936	491	495	552	409
36	42	1687	D100906	D100931	279	449	558	379
36	43	1688	D100905	D100932	0	2	0	0
36	44	1689	D100904	D100933	189	184	200	200
36	45	1690	D100902	D100935	185	186	218	222
37	27	1719	D100611	D100614	5	6	10	4
37	28	1720	D100612	D100613	63	89	145	77
37	29	1721	D100707	D100718	426	308	477	408
37	30	1722	D100708	D100717	383	480	625	395
37	31	1723	D100709	D100716	0	0	0	0
37	32	1724	D100710	D100715	0	0	0	0
37	33	1725	D100711	D100714	0	0	0	0
37	34	1726	D100712	D100713	0	0	0	0
37	35	1727	D100700		0	0	0	0
37	36	1728	D100807		0	0	0	0
37	37	1729	D100808		0	0	0	0
37	38	1730	D100809		0	0	0	0
37	39	1731	D100810		0	0	0	0
37	44	1736	D100909		1118	955	970	1010
37	45	1737	D100910		392	386	418	517
38	30	1769	D100720		0	0	0	0
38	31	1770	D100721		0	0	0	0
38	32	1771	D100722		0	0	0	0
38	33	1772	D100723		0	0	0	0
38	34	1773	D100724		0	0	0	0
38	35	1774	D100700		0	0	0	0
38	36	1775	D100819		0	0	0	0
38	37	1776	D100820		0	0	0	0
38	38	1777	D100821		0	0	0	0
38	39	1778	D100822		0	0	0	0
38	40	1779	D100823		0	0	0	0

PINAL AMA MODEL RECHARGE
1985-1988
Ac-Ft

Model Row	Model Column	Model Cell	Cadastral Location #1	Cadastral Location #2	1985	1986	1987	1988
38	41	1780	D100824		0	0	0	0
38	42	1781	D100919		29	28	32	27
38	43	1782	D100920		213	206	234	194
38	44	1783	D100921	D100922	347	337	364	345
38	45	1784	D100923		878	741	927	897
38	46	1785	D100924		784	554	1879	1576

APPENDIX 8

DISTRIBUTION OF HYDRAULIC CONDUCTIVITY AND SPECIFIC YIELD-TRANSIENT-STATE

COLUMN

ROW	1									10										20										30										40							47
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	300	300	350	400	650	750	650	950	950	750	650	550	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	150	150	150	150	150	0
	0	300	300	350	400	550	550	550	550	550	750	650	550	550	350	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3000	3000	3000	3000	0	0	0	0	0	0	150	150	150	150	150	3000
	0	300	300	350	450	550	550	550	550	550	750	650	550	550	550	350	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3000	3000	3000	3000	3000	0	0	0	150	150	150	150	150	150	3000	3000
	0	300	300	350	450	550	550	550	550	550	550	550	650	550	550	350	350	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3000	3000	3000	3000	3000	3000	0	150	150	150	150	150	150	3000	3000	350
	0	300	300	350	450	550	550	550	550	550	550	550	650	550	550	550	350	0	0	0	0	0	0	0	0	0	0	0	0	0	3000	3000	3000	3000	3000	3000	3000	0	150	150	150	150	3000	3000	3000	750	350
	0	350	350	350	450	550	550	550	550	550	550	550	650	550	550	550	0	0	0	0	0	0	0	0	0	0	0	0	0	0	300	300	300	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	750	300	300
	0	400	400	400	450	550	550	550	550	550	550	550	650	550	550	550	350	0	0	0	0	0	0	0	0	0	0	0	0	0	300	300	300	300	300	3000	3000	3000	3000	3000	3000	3000	750	750	250	200	150
	0	0	400	450	450	550	550	550	550	550	550	750	650	550	550	550	350	0	0	0	0	0	0	0	0	0	0	0	0	0	300	300	300	300	300	400	3000	3000	3000	3000	3000	750	750	200	200	150	150
10	0	0	0	550	450	650	550	550	550	550	550	750	750	550	550	550	350	350	350	0	0	0	0	250	250	250	250	250	0	0	300	300	300	300	300	400	400	350	300	300	300	250	200	200	150	150	150
	0	0	350	550	450	650	550	550	550	550	550	550	700	550	550	550	550	350	350	350	0	0	250	200	250	250	250	250	0	0	300	300	300	300	300	300	400	350	300	300	300	250	200	150	150	150	150
	0	0	350	350	450	650	550	550	550	550	550	550	750	650	650	550	550	550	550	600	650	650	600	600	550	350	350	350	0	0	450	450	450	450	400	400	400	350	300	300	250	200	150	150	150	150	150
	0	350	350	350	450	600	550	550	550	550	550	550	650	650	650	650	650	600	600	600	650	650	650	650	550	350	350	350	350	0	450	450	450	500	500	500	400	350	300	350	250	200	150	150	150	150	150
	0	350	350	350	450	650	550	550	550	550	550	550	550	750	650	650	650	650	650	650	650	650	650	650	650	550	450	400	300	350	350	450	400	400	400	400	350	300	250	200	150	150	150	150	150	150	150
	0	350	350	350	350	350	550	550	550	550	550	550	550	750	650	650	650	650	600	600	650	650	650	650	650	550	450	450	450	350	350	350	350	350	300	300	300	250	250	200	150	150	150	200	250	250	250
	0	0	350	350	350	350	450	450	550	550	550	550	550	550	750	650	650	600	650	600	650	650	650	650	650	450	400	450	350	350	300	200	200	200	200	200	250	200	200	150	150	150	150	250	250	300	300
	0	0	350	350	350	350	350	450	650	550	550	550	850	850	750	650	650	650	650	600	650	650	650	550	650	450	450	450	350	350	300	200	200	150	150	150	150	150	150	150	150	200	250	250	300	350	350
	0	0	0	0	0	0	350	450	450	650	950	950	850	750	650	650	550	550	650	650	650	650	650	550	650	450	450	450	350	350	300	200	200	150	150	150	150	150	150	150	150	200	250	250	350	350	0
	0	0	0	0	250	250	450	450	450	650	950	950	950	950	950	850	850	850	650	650	650	650	650	550	650	450	450	450	450	350	350	200	200	150	150	150	150	150	150	150	150	200	250	300	350	0	0
20	0	0	0	0	200	200	450	450	450	650	650	950	950	950	850	850	850	850	850	750	650	650	650	550	550	500	500	500	450	350	350	300	300	200	150	150	150	150	150	150	150	200	250	300	350	0	0
	0	0	0	0	200	200	200	450	450	450	450	650	950	850	850	850	850	850	850	850	650	550	550	550	550	550	0	0	550	450	450	0	300	200	150	150	150	150	150	150	200	200	250	300	350	0	0
	0	0	0	0	0	0	350	350	450	450	450	650	950	950	950	950	850	850	850	850	650	550	550	550	550	550	0	0	650	550	550	450	300	200	150	150	150	150	150	150	200	200	250	300	350	0	0
	0	0	0	0	0	0	0	450	450	450	450	450	650	650	950	950	950	950	950	850	650	550	550	550	550	550	0	0	650	650	450	400	250	200	150	150	150	150	150	150	200	200	250	300	350	0	0
	0	0	0	0	0	0	0	450	450	450	450	450	450	650	650	950	950	950	950	850	650	550	550	550	550	550	550	0	650	650	350	350	250	200	150	150	150	150	150	150	200	250	250	300	350	0	0
	0	0	0	0	0	0	0	0	0	0	0	350	350	650	650	650	650	650	650	650	0	550	550	550	550	550	550	650	550	450	300	250	200	150	150	150	150	150	150	150	200	250	250	350	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	350	350	600	600	600	600	600	600	650	650	550	550	550	550	550	450	350	300	200	200	150	150	150	150	150	150	150	150	200	250	300	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	350	350	350	550	550	550	550	550	550	0	550	650	550	550	450	350	250	200	150	150	150	150	150	150	150	150	150	200	250	300	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	350	350	350	550	550	550	550	550	0	0	0	650	550	550	450	350	200	150	150	150	150	150	150	150	150	150	150	200	250	300	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	550	550	550	550	0	0	300	300	450	350	350	300	150	150	150	150	150	150	150	150	150	150	150	150	200	250	300	0	0	0	0
30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	300	300	300	250	200	200	150	150	150	150	150	150	150	150	150	150	150	150	200	200	200	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	300	300	300	250	200	200	150	150	150	150	150	150	150	150	150	150	150	150	200	200	200	200	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	300	300	250	250	200	150	150	150	150	150	150	150	150	150	175	175	150	200	200	200	200	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	300	300	150	150	150	150	150	150	150	150	150	150	150	150	200	250	350	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	150	150	150	150	150	150	150	150	150	150	150	200	250	300	350	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	300	150	150	150	150	150	150	150	150	200	250	250	250	250	300	350	450	450	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	350	300	200	150	150	150	150	150	150	200	250	300	300	350	350	350	450	450	450	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	350	300	200	250	200	150	150	150	300	300	300	300	350	400	400	400	450	450	450	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	300	200	200	200	200	300	350	350	350	350	0	0	0	0	500	500	0	0
39	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

DISTRIBUTION OF HYDRAULIC CONDUCTIVITY
TRANSIENT—STATE
LAYER 1
PINAL AMA MODEL
UNITS=GPD/FT2

COLUMN

ROW	1									10										20										30										40							47
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	2	4	6	7	9	19	30	27	15	7	5	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20	60	145	63	83	0
	0	2	3	6	6	8	9	18	18	16	8	7	6	8	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	86	86	62	64	0	0	0	0	0	0	14	13	31	64	117	18
	0	2	3	5	6	7	8	9	18	19	19	19	19	24	46	74	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	73	79	111	115	97	0	0	0	74	29	17	12	10	7	14	12
	0	5	2	5	5	7	9	10	13	16	24	23	23	25	35	37	57	0	0	0	0	0	0	0	0	0	0	0	0	0	0	38	50	59	73	104	133	0	73	78	44	23	13	13	11	12	8
	0	8	6	7	8	9	9	9	13	14	25	20	16	18	28	55	22	0	0	0	0	0	0	0	0	0	0	0	0	0	42	37	32	27	34	46	57	0	84	85	41	26	31	25	9	11	34
	0	28	17	9	9	8	9	9	10	10	13	15	8	7	4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	160	45	27	28	29	25	29	45	51	31	21	15	11	8	7	7	20
	0	25	21	14	9	9	9	9	9	9	11	14	9	4	3	6	7	0	0	0	0	0	0	0	0	0	0	0	0	0	43	27	25	25	25	20	20	14	11	11	9	8	5	4	5	4	6
	0	0	18	16	12	12	11	11	10	9	12	15	15	12	13	18	29	0	0	0	0	0	0	0	0	0	0	0	0	0	35	25	25	25	20	20	15	10	6	6	6	4	4	3	3	3	13
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	0	0	17	18	15	14	12	12	12	10	10	10	9	11	17	19	6	1	1	4	0	0	10	3	4	4	7	23	0	0	40	25	25	20	20	15	15	10	5	4	3	2	1	1	1	1	1
	0	0	14	13	13	12	13	13	12	10	9	9	10	9	11	10	8	4	2	4	12	12	5	2	3	3	6	11	0	0	52	18	16	10	10	9	6	5	3	3	2	1	1	1	1	1	1
	0	25	14	13	15	10	12	12	12	9	9	8	8	10	10	12	13	9	5	3	6	5	4	1	4	6	6	8	62	0	42	18	10	7	7	6	4	4	3	4	2	2	1	1	1	1	1
	0	27	13	15	13	12	12	11	11	10	10	8	9	11	11	10	11	9	6	4	3	2	3	4	4	5	6	7	13	37	24	10	7	6	5	4	3	3	2	2	2	1	1	2	2	2	4
	0	6	33	17	12	12	12	10	9	10	10	10	11	11	10	10	11	10	7	5	6	5	5	10	5	5	5	6	11	12	6	6	5	4	4	3	3	2	2	2	2	2	1	3	5	5	7
	0	0	8	25	14	11	3	7	6	7	9	9	9	10	9	10	13	8	6	4	6	6	5	10	8	6	6	6	8	8	4	3	3	2	2	2	2	2	2	1	2	2	2	3	6	13	12
	0	0	21	11	5	4	5	5	5	5	7	7	7	7	8	9	11	8	6	4	4	5	5	9	9	7	7	8	8	9	3	3	3	2	2	2	1	1	1	2	2	2	3	4	8	24	24
	0	0	0	0	0	0	5	3	2	3	4	5	6	6	7	8	9	8	7	5	5	4	4	8	11	11	9	10	13	10	8	3	3	2	2	2	2	2	2	2	2	2	3	4	10	26	0
	0	0	0	0	20	12	2	4	4	3	3	5	6	7	8	10	9	9	6	6	4	3	2	4	9	16	14	18	18	17	11	4	3	2	2	2	2	2	2	2	2	2	3	4	11	0	0
20	0	0	0	0	9	3	3	5	5	4	3	4	6	6	10	9	9	8	8	7	5	2	6	4	5	10	12	37	28	23	25	10	6	4	2	2	2	2	2	2	2	2	4	5	13	0	0
	0	0	0	0	10	4	3	3	2	4	5	6	6	9	8	10	9	9	8	9	4	4	6	9	12	29	0	0	48	44	41	0	8	4	3	2	2	2	2	2	2	3	4	5	16	0	0
	0	0	0	0	0	0	8	7	4	4	3	4	5	5	5	8	11	10	10	8	6	7	10	14	25	48	0	0	53	55	42	20	9	4	2	2	2	2	2	2	2	3	5	6	22	0	0
	0	0	0	0	0	0	0	4	2	1	3	3	3	4	5	5	7	10	8	8	7	7	10	14	20	36	0	0	54	46	19	17	6	3	2	2	2	3	3	3	3	3	5	9	36	0	0
	0	0	0	0	0	0	0	6	4	4	2	2	2	2	4	5	7	8	12	12	9	10	13	14	19	57	44	0	44	33	15	11	4	3	2	2	3	3	3	3	3	5	8	12	39	0	0
	0	0	0	0	0	0	0	0	0	0	0	4	3	3	5	6	9	9	15	7	0	12	13	17	20	25	38	51	36	19	10	5	3	2	2	3	3	4	4	4	4	6	13	40	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	11	6	6	6	8	12	13	17	23	15	15	13	23	20	20	16	12	10	6	4	2	2	3	3	4	4	4	5	4	6	12	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	9	8	7	13	14	16	19	28	10	0	23	39	19	17	14	11	7	5	3	3	4	4	4	5	5	5	5	5	6	12	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	4	3	4	7	7	9	13	20	0	0	0	41	23	22	17	15	6	4	5	4	5	5	5	6	6	6	6	5	7	24	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	6	7	11	0	0	14	14	19	13	14	7	7	5	5	5	5	5	6	6	6	6	6	6	5	14	19	0	0	0	0
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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	8	8	12	13	11	11	9	11	8	5	6	6	5	5	5	5	6	8	10	21	90	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	5	10	21	16	14	22	11	8	5	5	5	5	5	5	5	6	7	12	38	91	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	31	24	16	9	9	6	5	5	5	5	5	5	7	8	16	31	178	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15	4	5	6	4	5	6	6	6	9	12	17	24	36	166	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	75	11	3	3	3	3	4	5	5	8	16	18	22	27	30	57	96	102	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	86	64	24	3	3	3	3	3	4	5	8	13	16	25	34	29	36	44	26	0	0
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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	3	3	3	4	5	6	6	6	13	0	0	0	0	93	72	0	0
39	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

DISTRIBUTION OF HYRAULIC CONDUCTIVITY
TRANSIENT—STATE
LAYER 2
PINAL AMA MODEL
UNITS=GPD/FT2

COLUMN

ROW	1									10										20										30										40							47
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	130	130	130	150	150	160	160	160	150	150	150	130	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	130	130	130	130	130	0
	0	130	130	130	150	150	160	160	160	150	150	150	130	130	130	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	200	200	200	200	0	0	0	0	0	0	130	130	130	130	130	200
	0	130	130	130	150	150	160	160	160	150	150	150	130	130	130	130	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	200	200	200	200	200	0	0	0	150	150	130	130	130	130	200	200
	0	130	130	130	150	150	160	160	160	150	150	150	130	130	130	130	130	0	0	0	0	0	0	0	0	0	0	0	0	0	0	200	200	200	200	200	200	0	150	150	130	130	130	130	200	200	112
	0	130	130	130	150	150	160	160	160	150	150	150	130	130	130	130	130	0	0	0	0	0	0	0	0	0	0	0	0	0	200	200	200	200	200	200	200	0	150	150	130	130	200	200	200	130	130
	0	130	130	130	150	150	160	160	160	150	150	150	130	130	130	130	0	0	0	0	0	0	0	0	0	0	0	0	0	0	150	150	150	200	200	200	200	200	200	200	200	200	200	200	130	130	130
	0	150	150	150	150	150	160	160	160	150	150	150	130	130	130	130	130	0	0	0	0	0	0	0	0	0	0	0	0	0	150	150	150	150	200	200	200	200	200	200	200	200	112	112	112	112	112
	0	0	150	150	150	150	150	160	160	150	150	150	150	130	130	130	130	0	0	0	0	0	0	0	0	0	0	0	0	0	150	150	150	150	150	150	200	200	200	200	200	112	112	112	112	112	112
10	0	0	0	150	150	150	150	160	200	160	160	150	150	130	130	130	130	130	130	0	0	0	0	130	130	130	130	130	0	0	150	150	150	150	150	160	150	130	130	130	130	112	112	112	112	112	112
	0	0	130	150	150	150	150	160	200	200	160	150	150	150	130	130	130	130	130	130	0	0	130	130	130	130	130	130	0	0	150	150	150	150	150	160	150	130	130	130	130	112	112	112	112	112	112
	0	0	130	130	150	150	150	160	200	200	160	150	150	150	150	150	130	130	130	130	150	150	150	130	150	130	130	130	0	0	150	160	160	150	160	160	150	130	130	130	112	112	112	112	112	112	112
	0	130	130	130	130	130	150	150	200	200	160	150	150	150	150	150	150	150	130	130	150	150	150	150	150	150	130	130	130	0	150	150	150	150	150	150	150	130	130	130	112	112	112	112	112	112	112
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	0	130	130	130	130	130	150	150	150	200	200	200	200	160	150	150	150	150	130	130	150	150	150	150	150	150	150	150	150	150	130	130	130	130	130	130	130	112	112	112	112	112	112	112	112	112	112
	0	0	130	130	130	130	130	150	150	160	200	200	200	200	160	160	160	150	130	130	150	150	150	150	150	150	150	150	150	150	112	112	112	112	112	112	112	112	112	112	112	112	112	112	112	130	130
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	0	0	0	0	112	112	112	150	150	150	150	200	200	200	200	200	200	200	200	200	200	200	150	150	150	160	160	160	160	160	150	112	112	112	112	112	112	112	112	112	112	112	112	130	130	0	0
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	0	0	0	0	0	0	0	0	0	0	0	0	0	130	130	130	150	150	150	150	150	150	0	150	160	150	150	150	130	112	112	112	112	112	112	112	112	112	112	112	112	112	130	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	130	130	130	150	150	150	150	150	0	0	0	160	150	150	150	130	112	112	112	112	112	112	112	112	112	112	112	112	112	130	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	150	150	150	150	0	0	130	130	150	130	130	130	112	112	112	112	112	112	112	112	112	112	112	112	112	112	130	0	0	0	0
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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	130	130	130	112	112	112	112	112	112	112	112	112	112	112	112	112	112	112	112	112	112	112	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	130	130	112	112	112	112	112	112	112	112	112	112	112	112	112	112	112	112	112	112	112	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	130	130	112	112	112	112	112	112	112	112	112	112	112	112	112	112	130	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	112	112	112	112	112	112	112	112	112	112	112	112	112	130	130	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	130	112	112	112	112	112	112	112	112	112	112	112	112	112	130	130	150	150	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	130	130	112	112	112	112	112	112	112	112	112	130	130	130	130	130	150	150	150	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	130	130	112	112	112	112	112	112	130	130	130	130	130	150	150	150	150	150	150	0	0
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39	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PRIMARY STORAGE CAPACITY (SPECIFIC YIELD)

LAYER 1

VALUE × 10−3

UNITS= DIMENSIONLESS

COLUMN

ROW	1									10										20										30										40							47
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	80	5	5	5	5	5	5	5	5	5	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	80	80	80	80	80	0
	0	80	5	5	5	5	5	5	5	5	5	5	5	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	80	80	80	80	0	0	0	0	0	0	80	80	80	80	80	80
	0	80	5	5	5	5	5	5	5	5	5	5	5	5	80	80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	80	80	80	80	80	0	0	0	80	80	80	80	80	5	5	80
	0	80	5	5	5	5	5	5	5	5	5	5	80	80	80	80	80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	80	80	80	80	80	80	0	80	80	80	80	80	80	5	5	80
	0	80	5	5	5	5	5	5	5	5	5	5	5	80	80	80	80	0	0	0	0	0	0	0	0	0	0	0	0	0	80	80	80	80	80	80	80	0	80	80	5	5	5	5	5	5	80
	0	80	80	5	5	5	5	5	5	5	5	5	5	5	80	80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	80	5	5	5	5	5	5	5	80	5	5	5	5	5	5	5	80
	0	80	80	80	5	5	5	5	5	5	5	5	5	5	80	80	80	0	0	0	0	0	0	0	0	0	0	0	0	0	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	80
	0	0	80	80	5	5	5	5	5	5	5	5	5	5	80	80	80	0	0	0	0	0	0	0	0	0	0	0	0	0	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	80
10	0	0	0	80	80	5	5	5	5	5	5	5	5	5	80	80	80	80	80	0	0	0	0	80	80	80	80	80	0	0	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	80
	0	0	80	80	80	5	5	5	5	5	5	5	5	5	5	80	80	80	80	80	0	0	80	80	80	80	80	80	0	0	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	80
	0	0	80	80	80	5	5	5	5	5	5	5	5	5	5	5	80	80	80	80	80	80	80	80	80	80	80	80	0	0	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	80
	0	80	80	80	80	80	5	5	5	5	5	5	5	5	5	5	80	80	80	80	80	80	80	80	80	80	80	5	5	0	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	80
	0	80	80	80	80	80	5	5	5	5	5	5	5	5	5	5	80	80	80	80	80	80	80	80	80	80	80	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	80	80
	0	80	80	80	80	5	5	5	5	5	5	5	5	5	5	5	80	80	80	80	80	80	80	80	80	80	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	80	80
	0	0	80	80	80	80	5	5	5	5	5	5	5	5	5	5	80	80	80	80	80	80	80	80	80	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	80	80
	0	0	80	80	80	80	5	5	5	5	5	5	5	5	5	5	80	80	80	80	80	80	80	80	80	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	80	80
	0	0	0	0	0	0	80	5	5	5	5	5	5	5	5	5	80	80	80	80	80	80	80	80	80	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	80	0
	0	0	0	0	80	80	80	80	5	5	5	5	5	5	5	80	80	80	80	80	80	80	80	80	80	80	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	0	0
20	0	0	0	0	80	80	80	80	80	5	5	5	5	5	80	80	80	80	80	80	80	80	80	80	80	80	80	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	0	0
	0	0	0	0	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	0	0	5	5	5	0	5	5	5	5	5	5	5	5	5	5	5	5	80	0	0
	0	0	0	0	0	0	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	0	0	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	80	0	0
	0	0	0	0	0	0	0	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	0	0	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	80	0	0
	0	0	0	0	0	0	0	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	0	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	80	0	0
	0	0	0	0	0	0	0	0	0	0	0	80	80	80	80	80	80	80	80	80	0	80	80	80	80	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	80	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	80	80	80	80	80	80	80	80	80	80	80	80	80	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	80	80	80	80	80	80	80	80	80	0	80	80	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	80	80	80	80	80	80	80	80	0	0	0	80	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	80	80	80	80	0	0	80	80	80	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	0	0	0	0
30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	80	80	80	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	80	80	80	80	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	80	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	80	80	80	80	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	80	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	80	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	80	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	5	5	5	5	5	5	5	5	5	5	5	5	5	80	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	80	5	5	5	5	5	5	5	5	5	5	80	80	80	80	80	80	80	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	80	80	80	5	5	5	5	5	5	5	5	5	80	80	80	80	80	80	80	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	80	80	80	80	80	80	80	80	80	80	0	0	0	0	80	80	0	0
39	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PRIMARY STORAGE CAPACITY
(SPECIFIC YIELD OR STORAGE COEFFICIENT)
LAYER 2
VALUE × 10—3
UNITS = DIMENSIONLESS

COLUMN

ROW	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	80	80	80	70	70	80	80	80	80	80	80	80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	80	80	80	80	80	0
3	0	80	80	80	70	70	70	80	80	80	80	80	80	80	80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	80	80	80	80	0	0	0	0	0	0	80	80	80	80	80	80
4	0	80	80	80	70	70	70	70	80	80	80	80	80	80	80	80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	80	80	80	80	80	0	0	0	80	80	80	80	80	80	80	80
5	0	80	80	80	70	70	70	70	70	80	80	80	80	80	80	80	80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	80	80	80	80	80	80	0	80	80	80	80	80	80	80	80	80
6	0	80	80	80	80	70	70	70	70	80	80	80	80	80	80	80	80	0	0	0	0	0	0	0	0	0	0	0	0	0	80	80	80	80	80	80	80	0	80	80	80	80	80	80	80	80	80
7	0	80	80	80	80	80	70	70	70	70	80	80	80	80	80	80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80
8	0	80	80	80	80	80	70	70	70	70	80	80	80	80	80	80	80	0	0	0	0	0	0	0	0	0	0	0	0	0	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80
9	0	0	80	80	80	80	80	70	70	70	80	80	80	80	80	80	80	0	0	0	0	0	0	0	0	0	0	0	0	0	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80
10	0	0	0	80	80	80	80	70	70	70	80	80	80	80	80	80	80	80	80	0	0	0	0	80	80	80	80	80	0	0	80	80	80	80	80	80	80	80	80	80	80	80	70	80	80	80	80
11	0	0	80	80	80	80	80	80	70	70	80	80	80	80	80	80	80	80	80	80	0	0	80	80	80	80	80	80	0	0	80	80	80	70	70	70	70	70	70	70	70	70	70	80	80	80	80
12	0	0	80	80	80	80	80	80	70	70	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	0	0	80	80	80	70	70	70	70	70	70	70	70	70	80	80	80	80	80
13	0	80	80	80	80	80	80	80	80	70	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	0	80	80	80	70	70	70	70	70	70	70	70	70	80	80	80	80	80
14	0	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	70	70	70	70	70	70	70	70	80	80	80	80	80	80
15	0	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	70	70	70	70	70	70	70	70	80	80	80	80	80	80
16	0	0	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	70	70	70	70	70	70	70	70	80	80	80	80	80	80
17	0	0	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	70	70	70	70	70	70	70	70	70	80	80	80	80	80
18	0	0	0	0	0	0	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	70	70	70	70	70	70	70	70	70	80	80	80	30	0
19	0	0	0	0	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	70	70	70	70	70	70	70	70	70	80	80	80	0	0
20	0	0	0	0	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	70	70	70	70	70	70	70	70	70	80	80	80	0	0
21	0	0	0	0	80	80	80	80	80	80	80	80	80	80	80	50	80	80	80	80	80	80	80	80	80	80	0	0	80	80	80	0	80	70	70	70	70	70	70	70	70	70	80	80	80	0	0
22	0	0	0	0	0	0	60	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	0	0	80	80	80	80	80	80	70	70	70	70	70	70	70	70	80	80	80	0	0
23	0	0	0	0	0	0	0	80	80	80	80	80	80	60	80	80	80	80	80	80	80	80	80	80	80	80	0	0	80	80	80	80	80	80	70	70	70	70	70	70	70	70	80	80	80	0	0
24	0	0	0	0	0	0	0	20	80	80	80	80	80	20	80	80	80	80	80	80	80	80	80	80	80	80	80	0	80	80	80	80	80	70	70	70	70	70	70	70	70	70	80	80	80	0	0
25	0	0	0	0	0	0	0	0	0	0	0	80	80	80	80	80	80	80	80	80	0	80	80	80	80	80	80	80	80	80	80	80	70	70	70	70	70	70	70	70	70	70	80	80	0	0	0
26	0	0	0	0	0	0	0	0	0	0	0	0	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	70	70	70	70	70	70	70	70	70	70	70	80	0	0	0	0
27	0	0	0	0	0	0	0	0	0	0	0	0	0	80	80	80	80	80	80	80	80	80	0	80	80	80	80	80	80	80	80	80	70	70	70	70	70	70	70	70	70	70	80	0	0	0	0
28	0	0	0	0	0	0	0	0	0	0	0	0	0	80	80	80	80	80	80	80	80	0	0	0	80	80	80	80	80	80	80	80	70	70	70	70	70	70	70	70	70	70	80	0	0	0	0
29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	80	80	80	80	0	0	80	80	80	80	80	80	80	80	80	80	70	70	70	70	70	70	70	70	70	80	80	0	0	0	0
30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	80	80	80	80	80	80	80	80	80	80	70	70	70	70	70	70	70	70	70	80	80	0	0	0	0
31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	80	80	80	80	80	80	80	80	80	80	80	70	70	70	70	70	70	80	70	80	80	80	0	0	0
32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	80	80	80	80	80	80	80	80	80	80	70	70	70	70	70	70	70	80	80	80	80	0	0	0
33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	80	80	80	80	80	80	80	70	70	70	70	70	70	80	80	80	80	0	0	0	0
34	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	80	80	80	80	80	80	80	80	80	80	80	80	80	80	30	0	0	0	0
35	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	0	0
36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	0	0
37	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	80	60	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	0	0
38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	80	80	80	80	80	80	80	80	80	80	0	0	0	0	80	80	0	0
39	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SECONDARY STORAGE CAPACITY (SPECIFIC YIELD)
LAYER 2
VALUE × 10−3
UNITS = DIMENSIONLESS

APPENDIX 9

FINAL CALIBRATED HYRAULIC CONDUCTIVITY ARRAY-STEADY-STATE

STEADY-STATE FINAL HYDRAULIC CONDUCTIVITY
LAYER 1
UNITS= GPD/FT2

COLUMN (across) / ROW (down)

ROW	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
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2	0	300	300	350	400	650	750	850	950	950	750	650	550	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	150	150	150	150	150	0
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COLUMN

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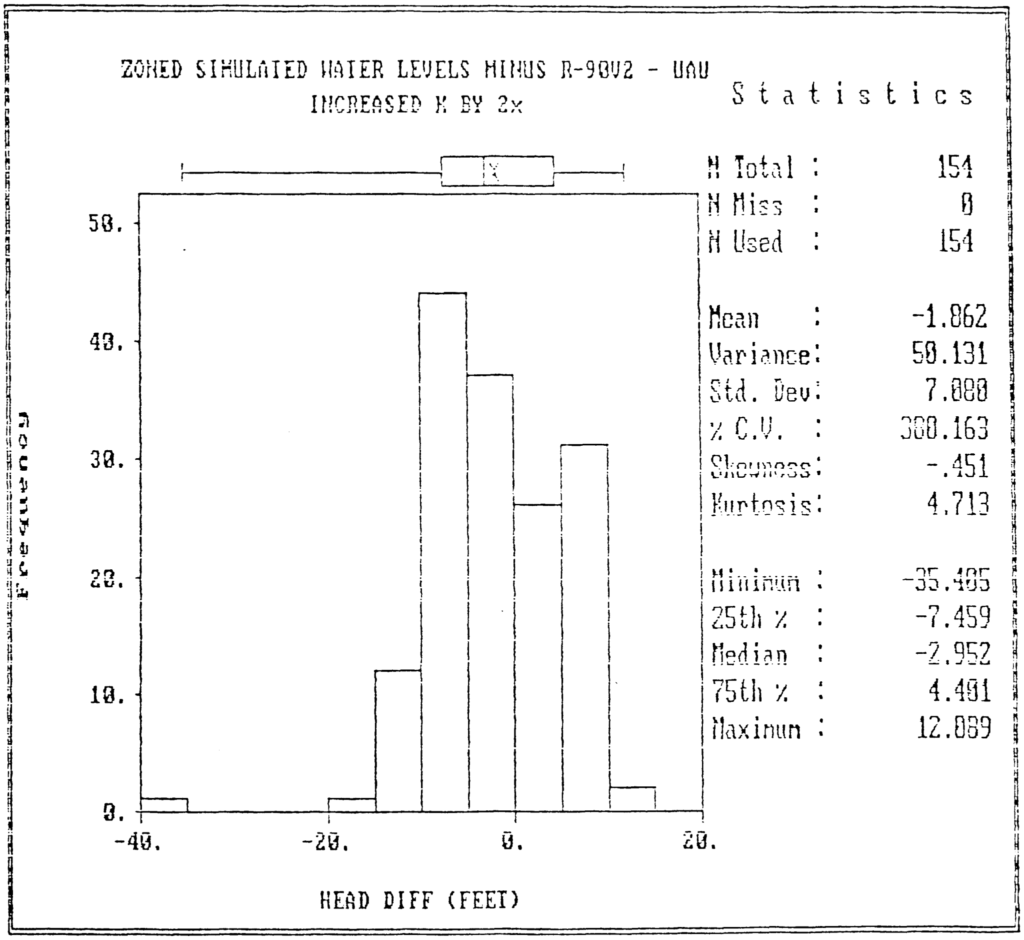
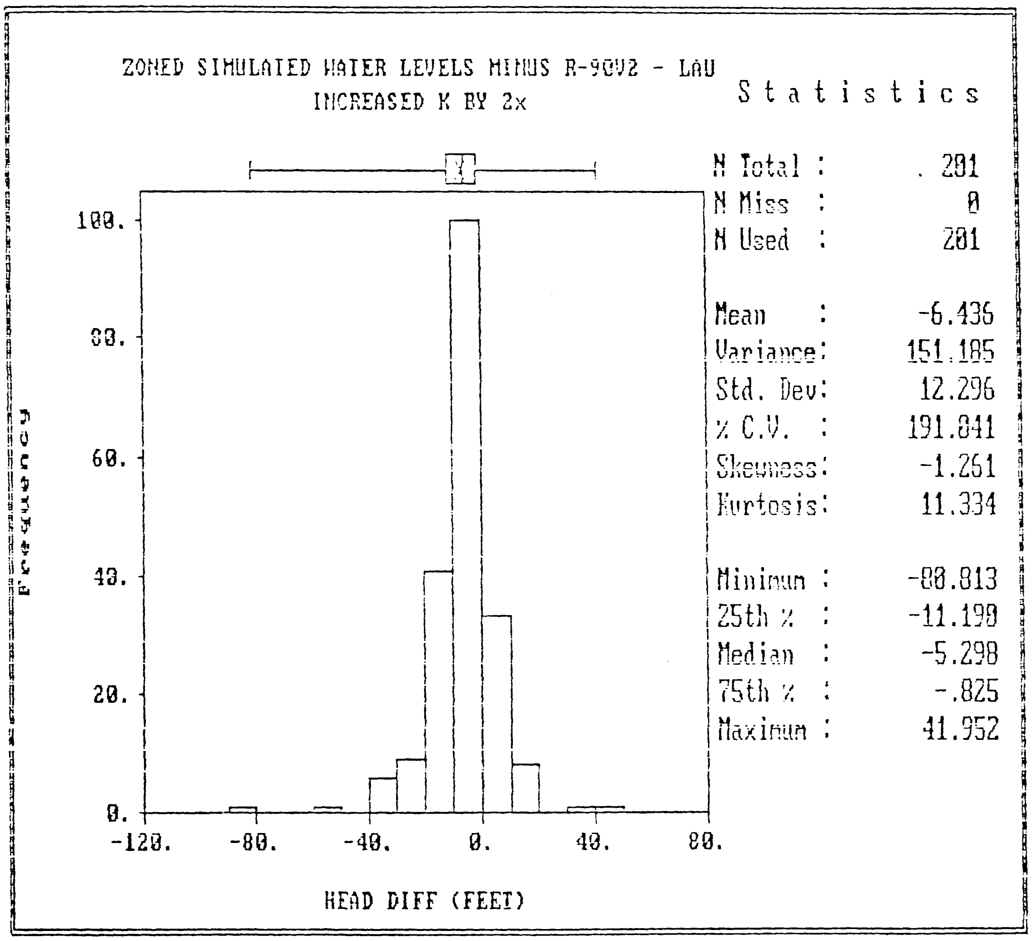
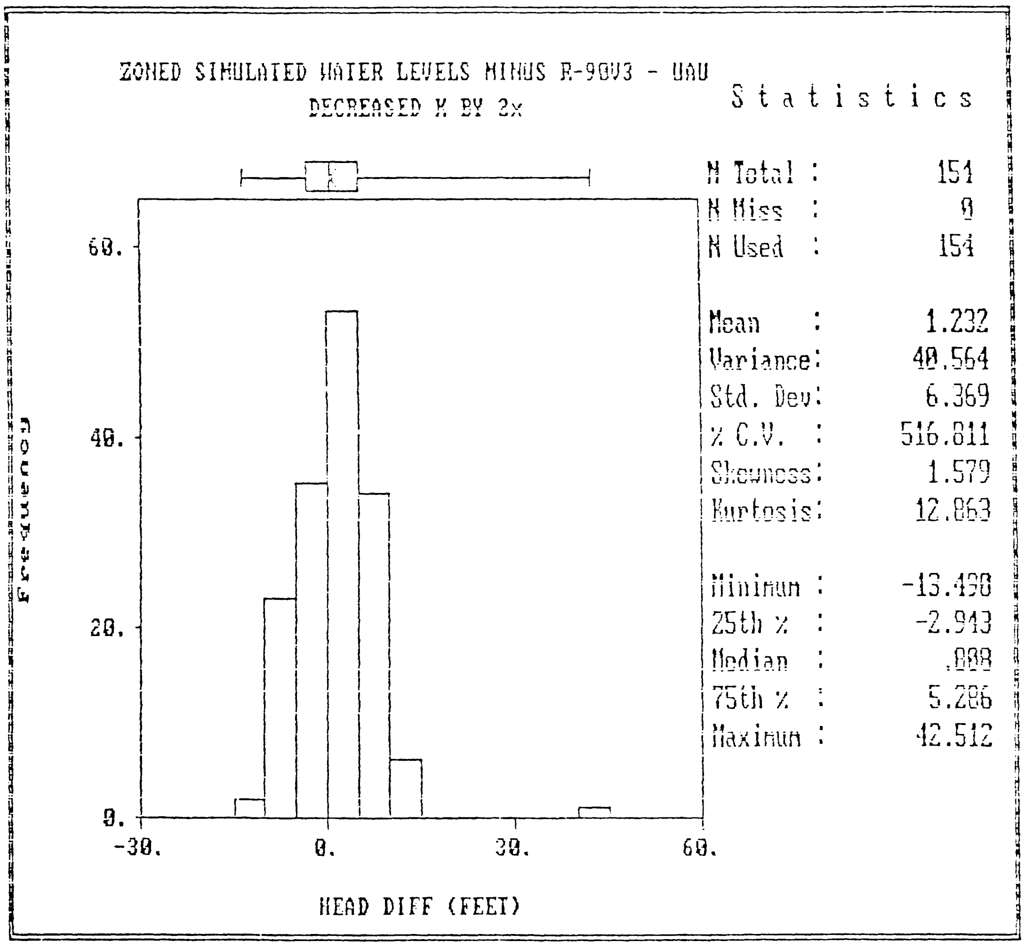
STEADY–STATE FINAL HYDRAULIC CONDUCTIVITY
LAYER 2
UNITS = GPD/FT2

APPENDIX 10

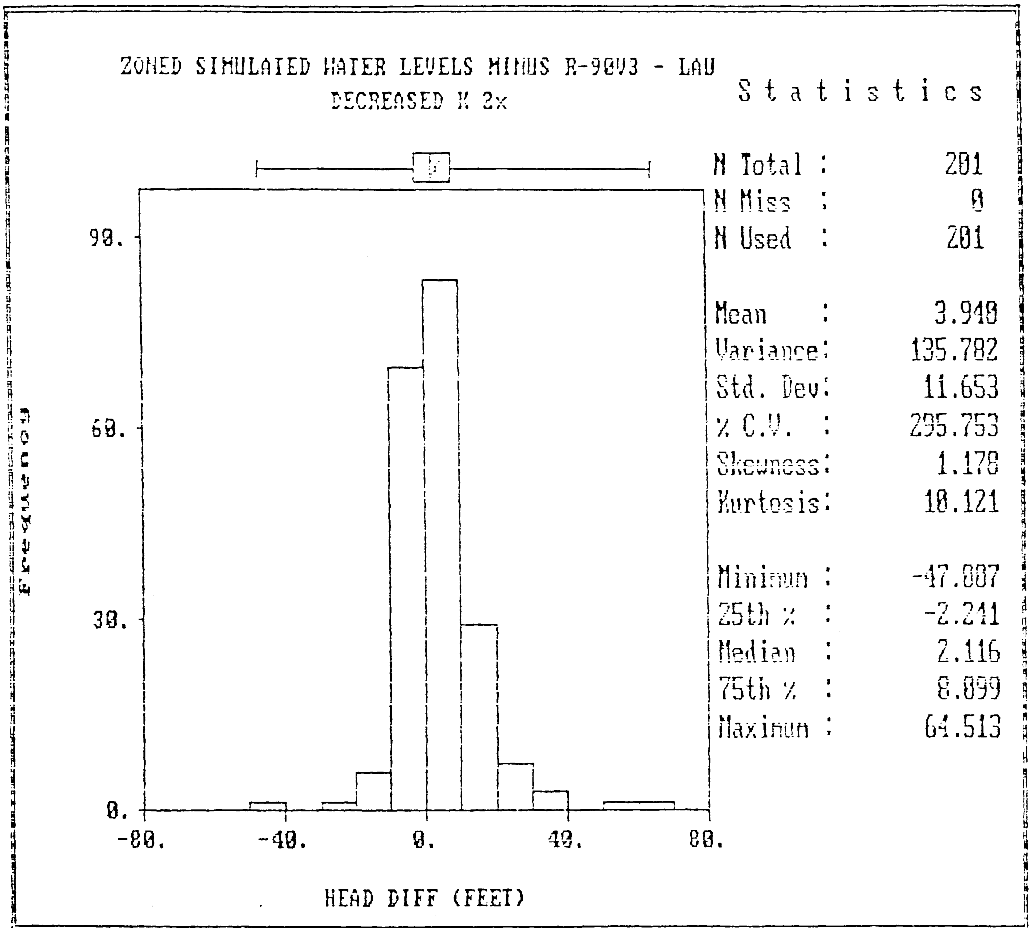
SENSITIVITY ANALYSIS STATISTICS


ZONED SIMULATED WATER LEVELS MINUS R-90V2 - UAU
INCREASED K BY 2x
Frequency
50.
40.
30.
20.
10.
0.
-40.
-20.
0.
20.
HEAD DIFF (FEET)
Statistics
N Total : 154
N Miss : 0
N Used : 154
Mean : -1.862
Variance: 50.131
Std. Dev: 7.080
% C.V. : 380.163
Skewness: -.451
Kurtosis: 4.713
Minimum : -35.405
25th % : -7.459
Median : -2.952
75th % : 4.401
Maximum : 12.089

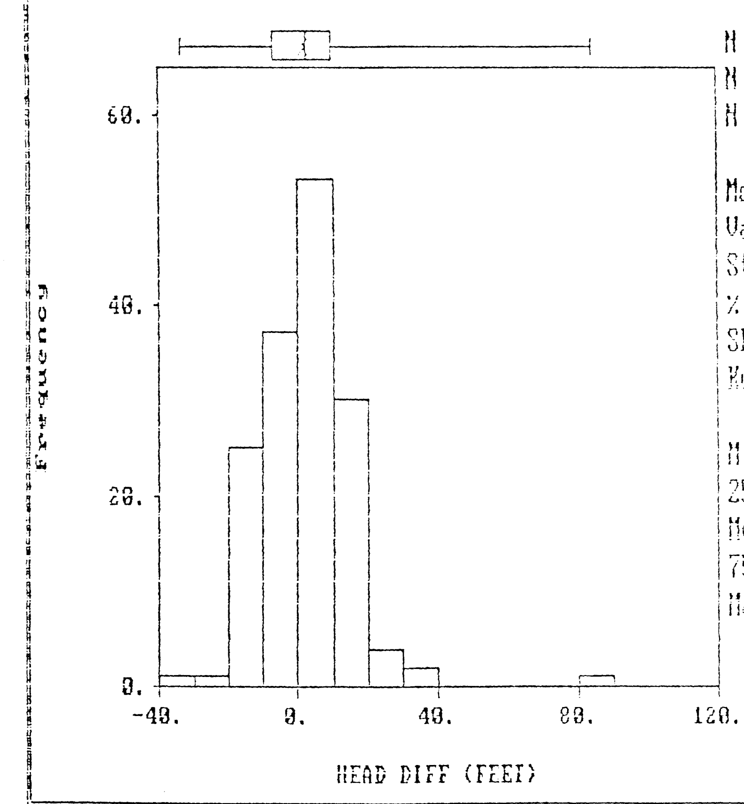

ZONED SIMULATED WATER LEVELS MINUS R-90V2 - LAU
INCREASED K BY 2x
Statistics
N Total : 201
N Miss : 0
N Used : 201
Mean : -6.436
Variance: 151.185
Std. Dev: 12.296
% C.V. : 191.041
Skewness: -1.261
Kurtosis: 11.334
Minimum : -88.813
25th % : -11.198
Median : -5.298
75th % : -.825
Maximum : 41.952
100.
80.
60.
40.
20.
0.
-120.
-80.
-40.
0.
40.
80.
Frequency
HEAD DIFF (FEET)



ZONED SIMULATED WATER LEVELS MINUS R-90V3 - UAU
DECREASED K BY 2x
Statistics
N Total : 154
N Miss : 0
N Used : 154
Mean : 1.232
Variance: 40.564
Std. Dev: 6.369
% C.V. : 516.811
Skewness: 1.579
Kurtosis: 12.863
Minimum : -13.498
25th % : -2.943
Median : .088
75th % : 5.286
Maximum : 42.512
60.
40.
20.
0.
-30.
0.
30.
60.
HEAD DIFF (FEET)

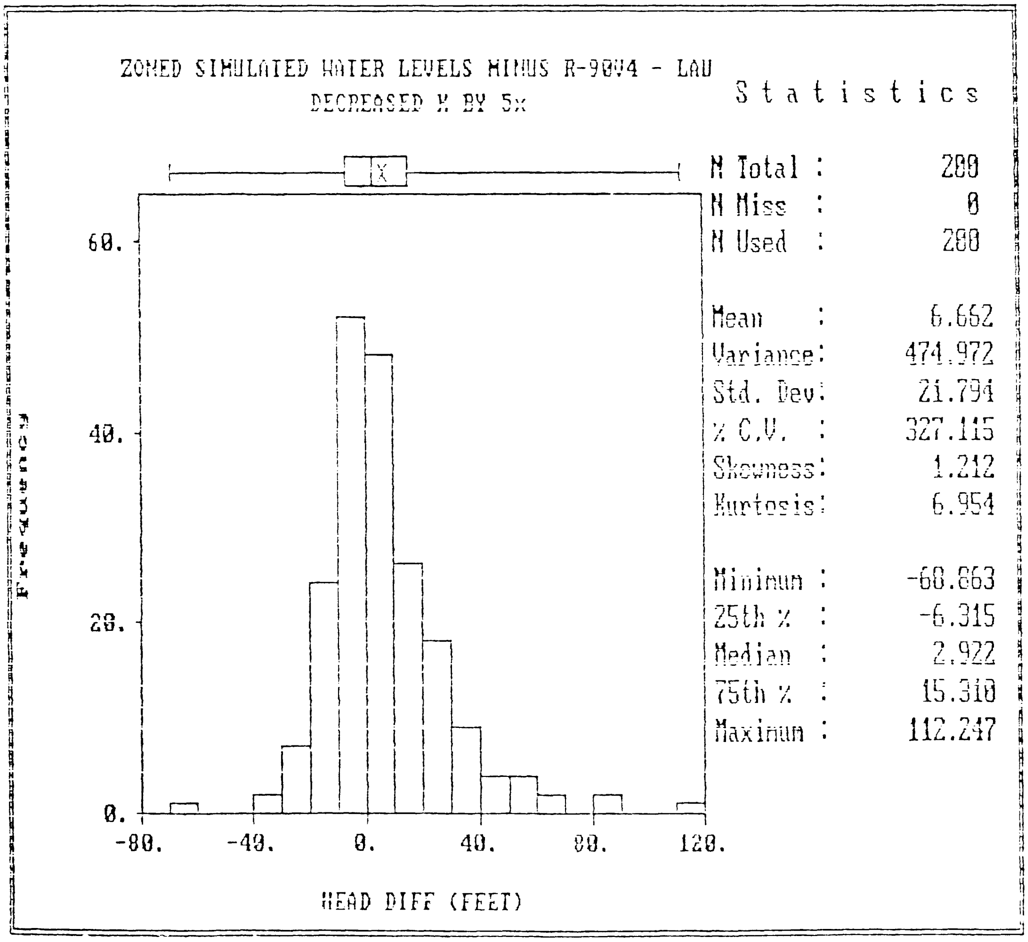

ZONED SIMULATED WATER LEVELS MINUS R-90V3 - LAU
DECREASED K 2x
Statistics
N Total : 201
N Miss : 0
N Used : 201
Mean : 3.940
Variance: 135.782
Std. Dev: 11.653
% C.V. : 295.753
Skewness: 1.178
Kurtosis: 10.121
Minimum : -47.807
25th % : -2.241
Median : 2.116
75th % : 8.899
Maximum : 64.513
90.
60.
30.
0.
-80.
-40.
0.
40.
80.
Frequency
HEAD DIFF (FEET)

ZONED SIMULATED WATER LEVELS MINUS R-90V4 - UAU
DECREASED K BY 5%

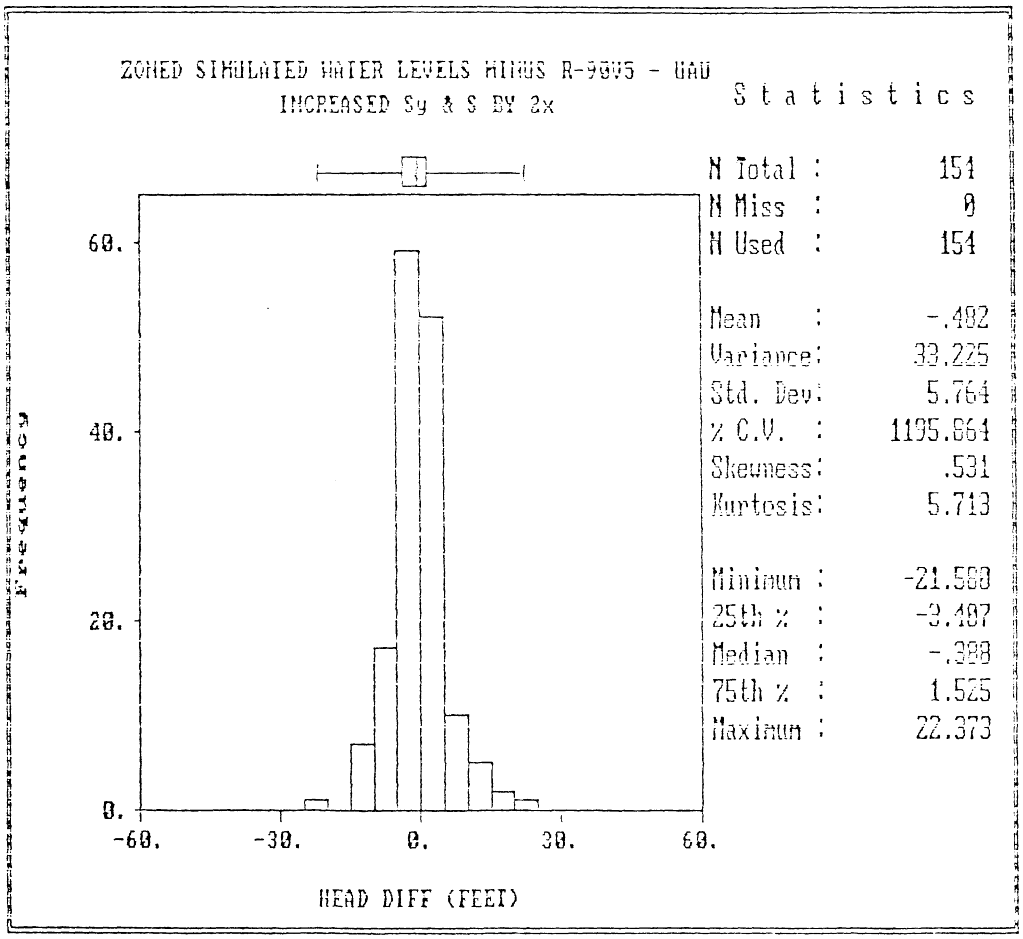


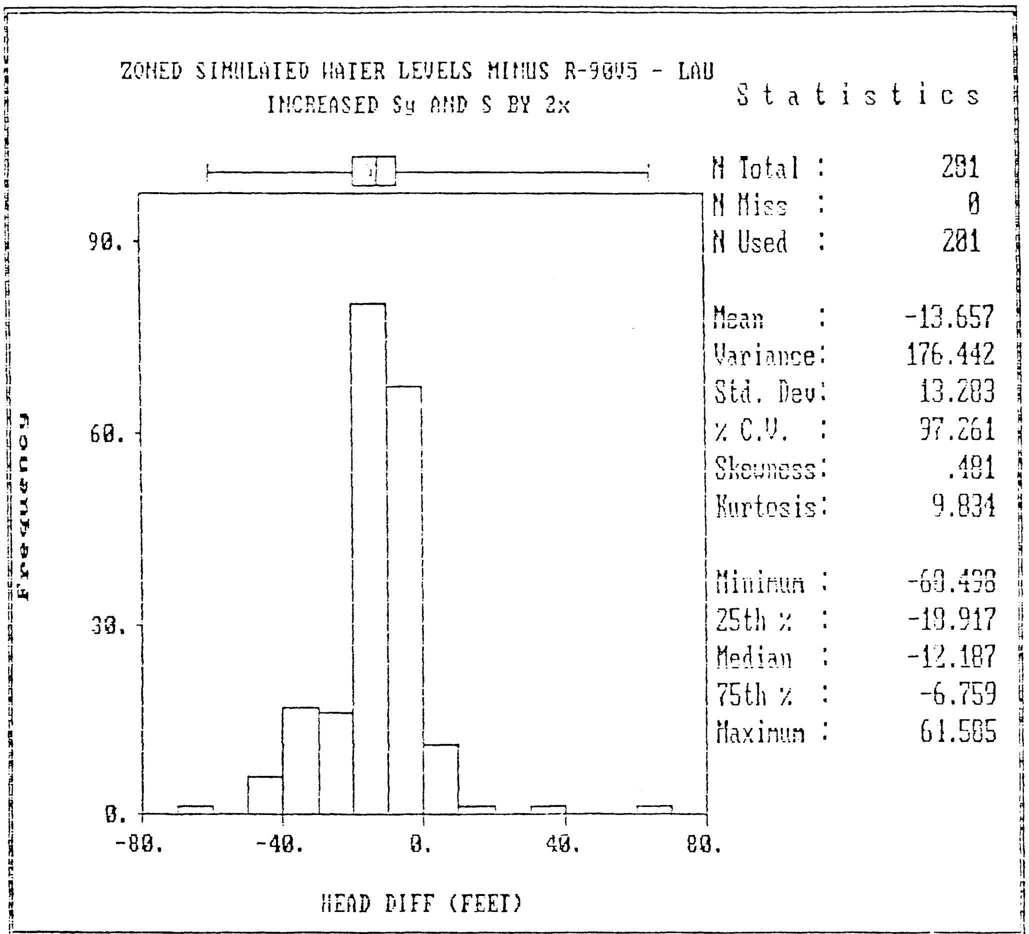
Statistics

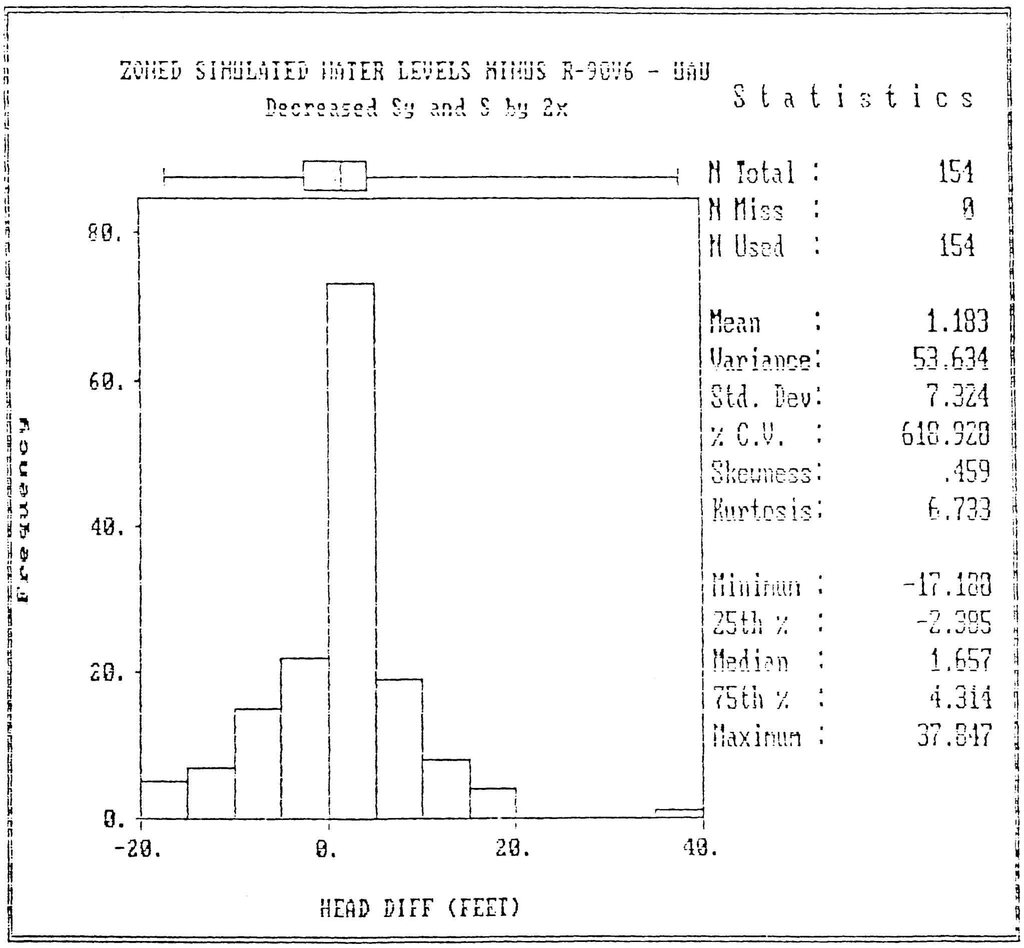
N Total :	154
N Miss :	0
N Used :	154
Mean :	2.058
Variance:	173.922
Std. Dev:	13.188
% C.V. :	640.787
Skewness:	1.472
Kurtosis:	11.593
Minimum :	-33.439
25th % :	-7.016
Median :	2.363
75th % :	9.692
Maximum :	83.988

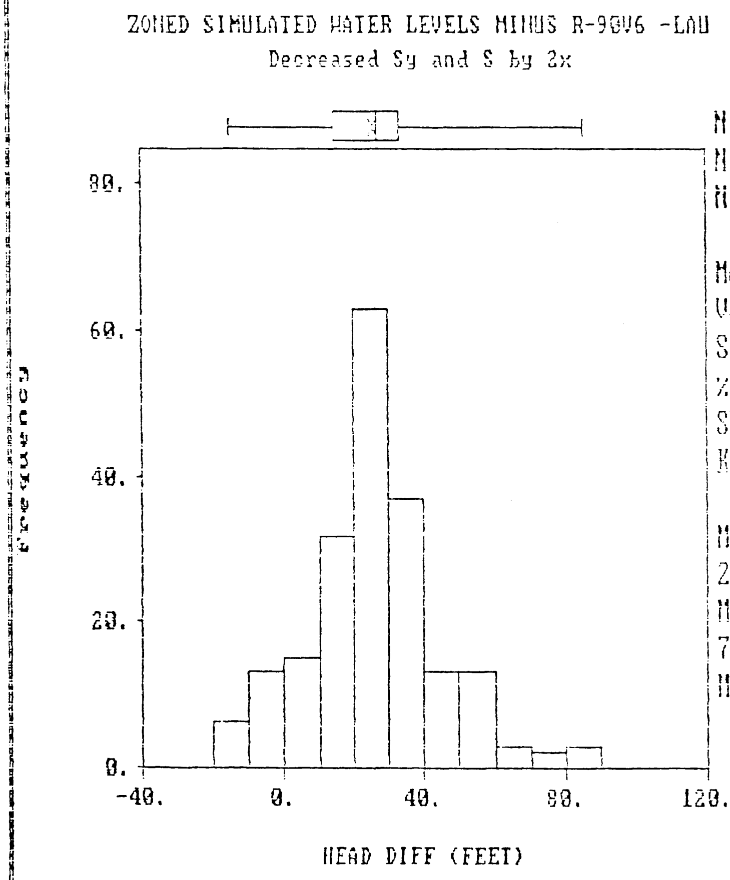


ZONED SIMULATED WATER LEVELS MINUS R-90V4 - LAU
DECREASED K BY 5x
Frequency
60.
40.
20.
0.
-80.
-40.
0.
40.
80.
120.
HEAD DIFF (FEET)
Statistics
N Total : 200
N Miss : 0
N Used : 200
Mean : 6.662
Variance: 474.972
Std. Dev: 21.794
% C.V. : 327.115
Skewness: 1.212
Kurtosis: 6.954
Minimum : -68.863
25th % : -6.315
Median : 2.922
75th % : 15.310
Maximum : 112.247


ZONED SIMULATED WATER LEVELS MINUS R-9905 - UAU
INCREASED Sy & S BY 2x
Statistics
N Total : 154
N Miss : 0
N Used : 154
Mean : -.482
Variance: 33.225
Std. Dev: 5.764
% C.V. : 1195.664
Skewness: .531
Kurtosis: 5.713
Minimum : -21.588
25th % : -3.407
Median : -.388
75th % : 1.525
Maximum : 22.373
Frequency
60.
40.
20.
0.
-60.
-30.
0.
30.
60.
HEAD DIFF (FEET)

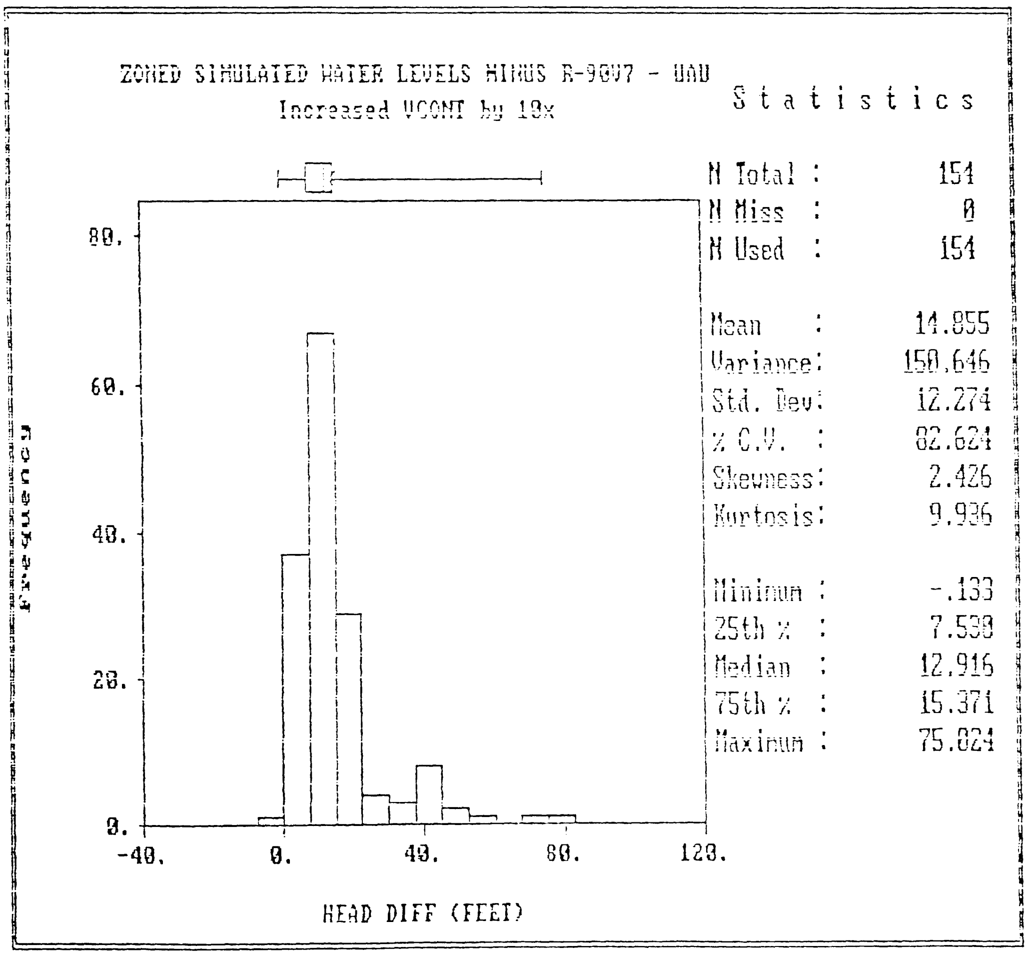

ZONED SIMULATED WATER LEVELS MINUS R-90V5 - LAU
INCREASED Sy AND S BY 2x
Statistics
N Total : 201
N Miss : 0
N Used : 201
Mean : -13.657
Variance: 176.442
Std. Dev: 13.283
% C.V. : 97.261
Skewness: .401
Kurtosis: 9.834
Minimum : -60.498
25th % : -19.917
Median : -12.187
75th % : -6.759
Maximum : 61.585
Frequency
90.
60.
30.
0.
-80.
-40.
0.
40.
80.
HEAD DIFF (FEET)


ZONED SIMULATED WATER LEVELS MINUS R-90V6 - UAU
Decreased Sy and S by 2x
Statistics
N Total : 154
N Miss : 0
N Used : 154
Mean : 1.183
Variance: 53.634
Std. Dev: 7.324
% C.V. : 618.920
Skewness: .459
Kurtosis: 6.733
Minimum : -17.180
25th % : -2.305
Median : 1.657
75th % : 4.314
Maximum : 37.847
Frequency
80.
60.
40.
20.
0.
-20.
0.
20.
40.
HEAD DIFF (FEET)

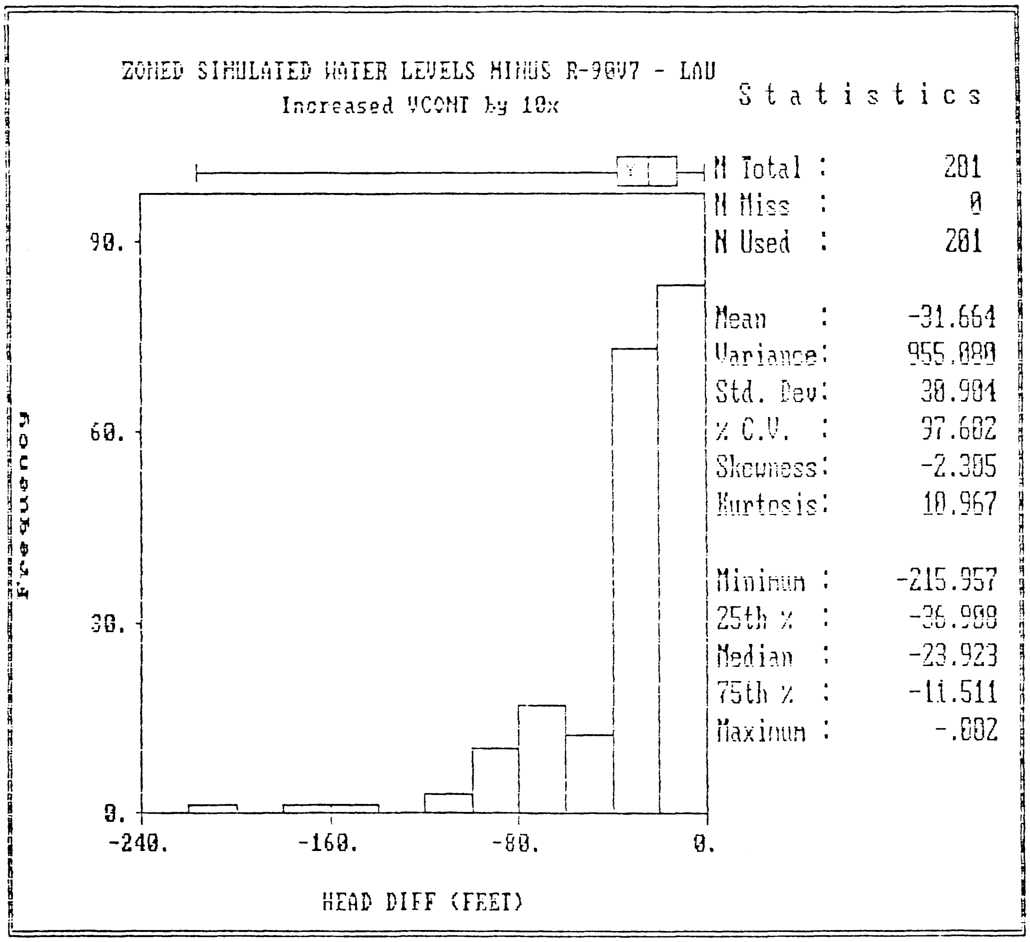


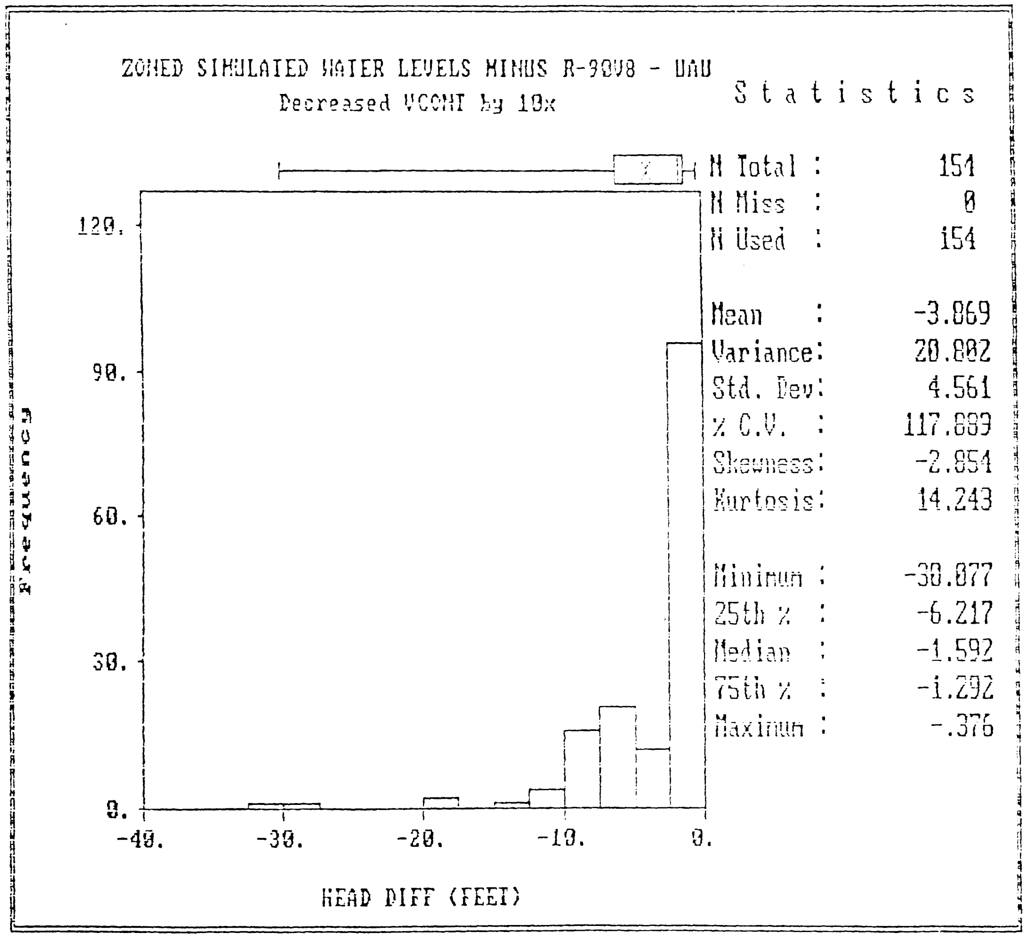
Statistics

N Total :	200
N Miss :	0
N Used :	200
Mean :	26.149
Variance:	343.975
Std. Dev:	18.547
% C.V. :	70.925
Skewness:	.364
Kurtosis:	3.766
Minimum :	-14.931
25th % :	14.570
Median :	27.336
75th % :	33.765
Maximum :	85.129

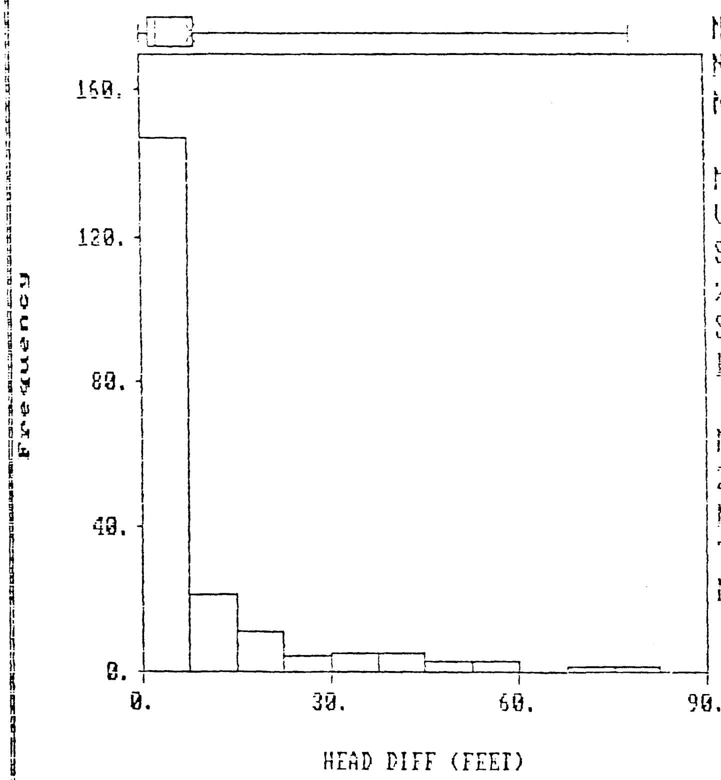


ZONED SIMULATED WATER LEVELS MINUS R-90V7 - UAU
Increased VCONT by 10x
Statistics
N Total : 154
N Miss : 0
N Used : 154
Mean : 14.855
Variance : 150.646
Std. Dev : 12.274
% C.V. : 82.624
Skewness : 2.426
Kurtosis : 9.936
Minimum : -.133
25th % : 7.530
Median : 12.916
75th % : 15.371
Maximum : 75.824
Frequency
80.
60.
40.
20.
0.
-40.
0.
40.
80.
120.
HEAD DIFF (FEET)


ZONED SIMULATED WATER LEVELS MINUS R-90V7 - LAU
Increased VCONT by 10x
Statistics
N Total : 201
N Miss : 0
N Used : 201
Mean : -31.664
Variance: 955.080
Std. Dev: 30.904
% C.V. : 97.602
Skewness: -2.305
Kurtosis: 10.967
Minimum : -215.957
25th % : -36.909
Median : -23.923
75th % : -11.511
Maximum : -.002
Frequency
90.
60.
30.
0.
-240.
-160.
-80.
0.
HEAD DIFF (FEET)

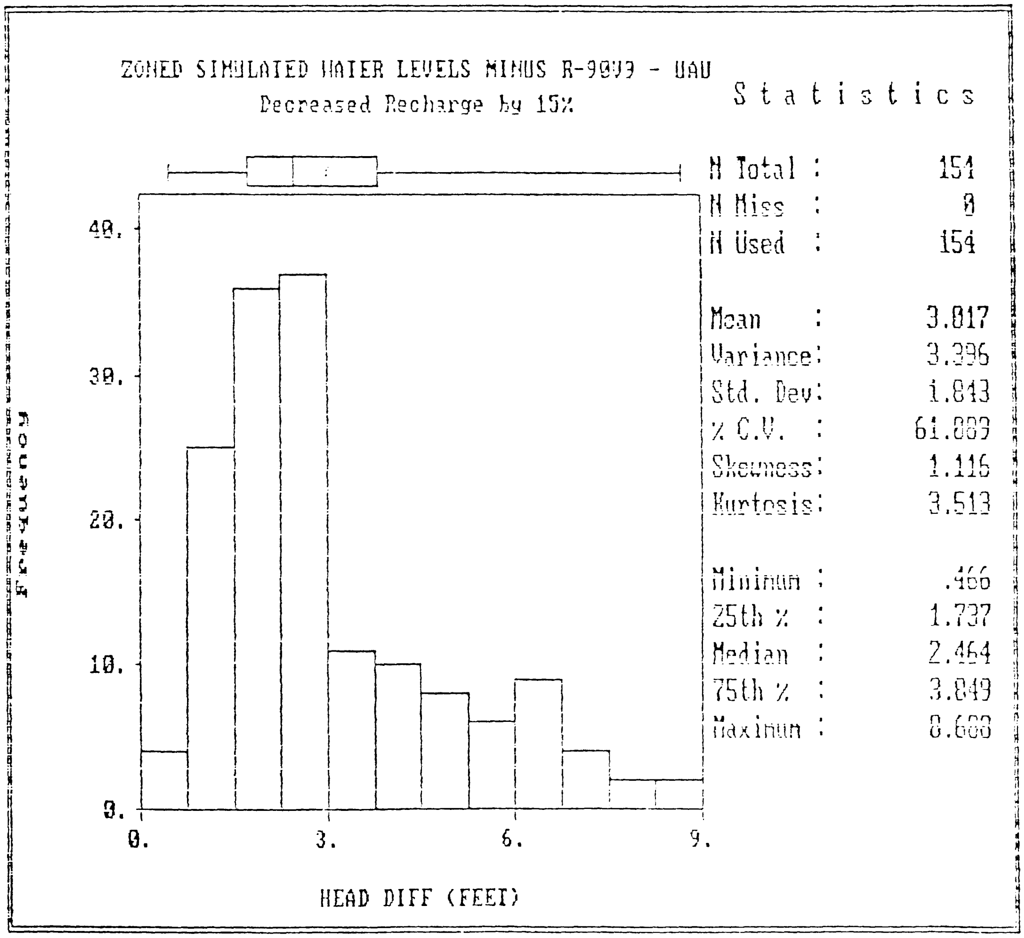

ZONED SIMULATED WATER LEVELS MINUS R-90V8 - UAU
Decreased VCONT by 10x
Statistics
N Total : 154
N Miss : 0
N Used : 154
Mean : -3.869
Variance: 20.802
Std. Dev: 4.561
% C.V. : 117.889
Skewness: -2.854
Kurtosis: 14.243
Minimum : -30.877
25th % : -6.217
Median : -1.592
75th % : -1.292
Maximum : -.376
Frequency
120.
90.
60.
30.
0.
-40.
-30.
-20.
-10.
0.
HEAD DIFF (FEET)

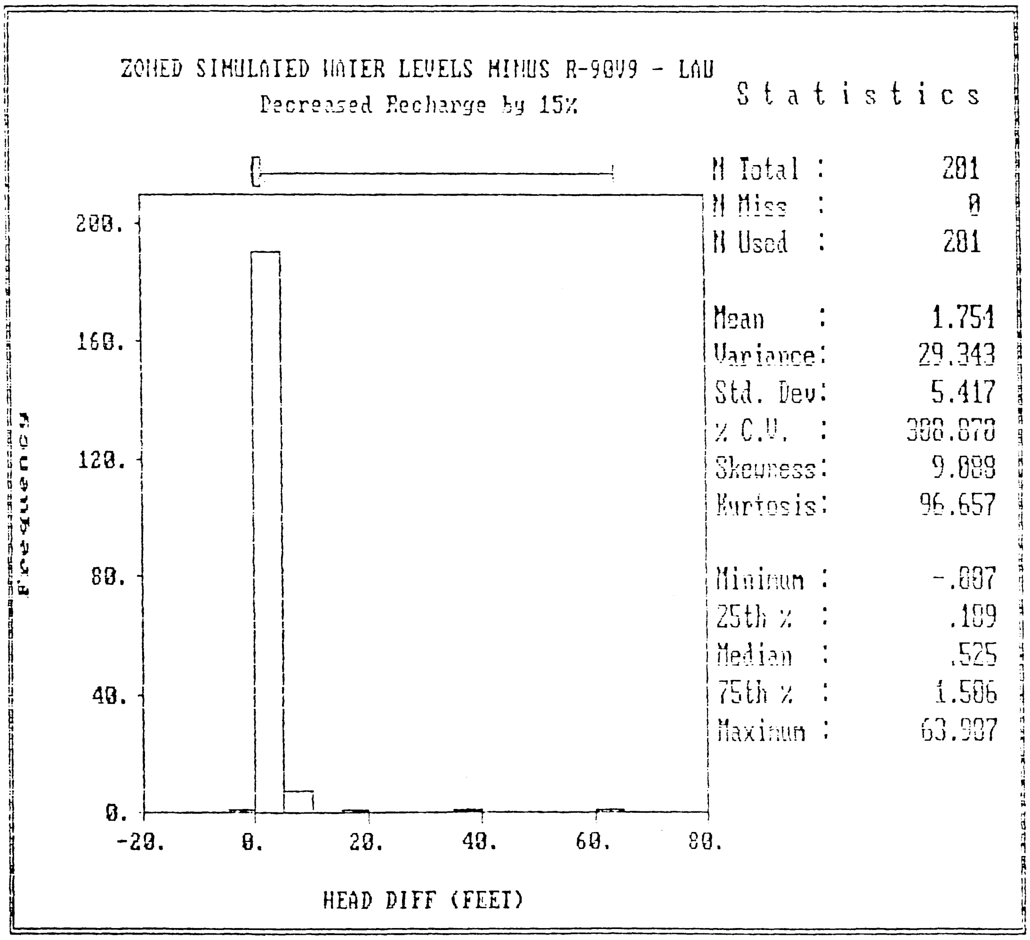
ZONED SIMULATED WATER LEVELS MINUS R-90V8 - LAU
Decreased VCONT by 10x

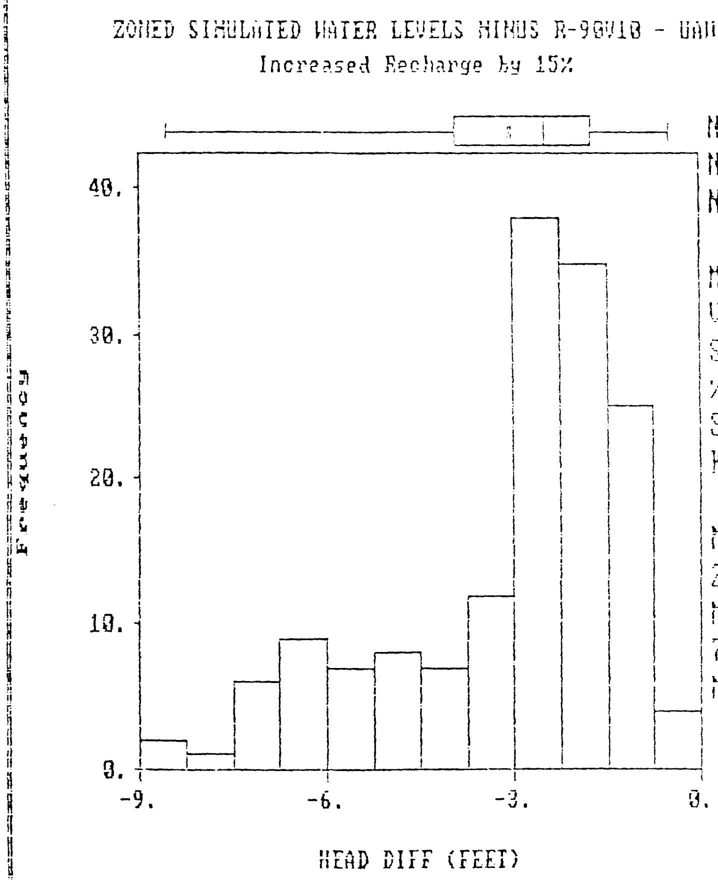


Statistics

N Total :	201
N Miss :	0
N Used :	201
Mean :	8.402
Variance:	190.090
Std. Dev:	13.787
% C.V. :	164.101
Skewness:	2.716
Kurtosis:	10.661
Minimum :	.001
25th % :	1.475
Median :	2.764
75th % :	8.747
Maximum :	78.171

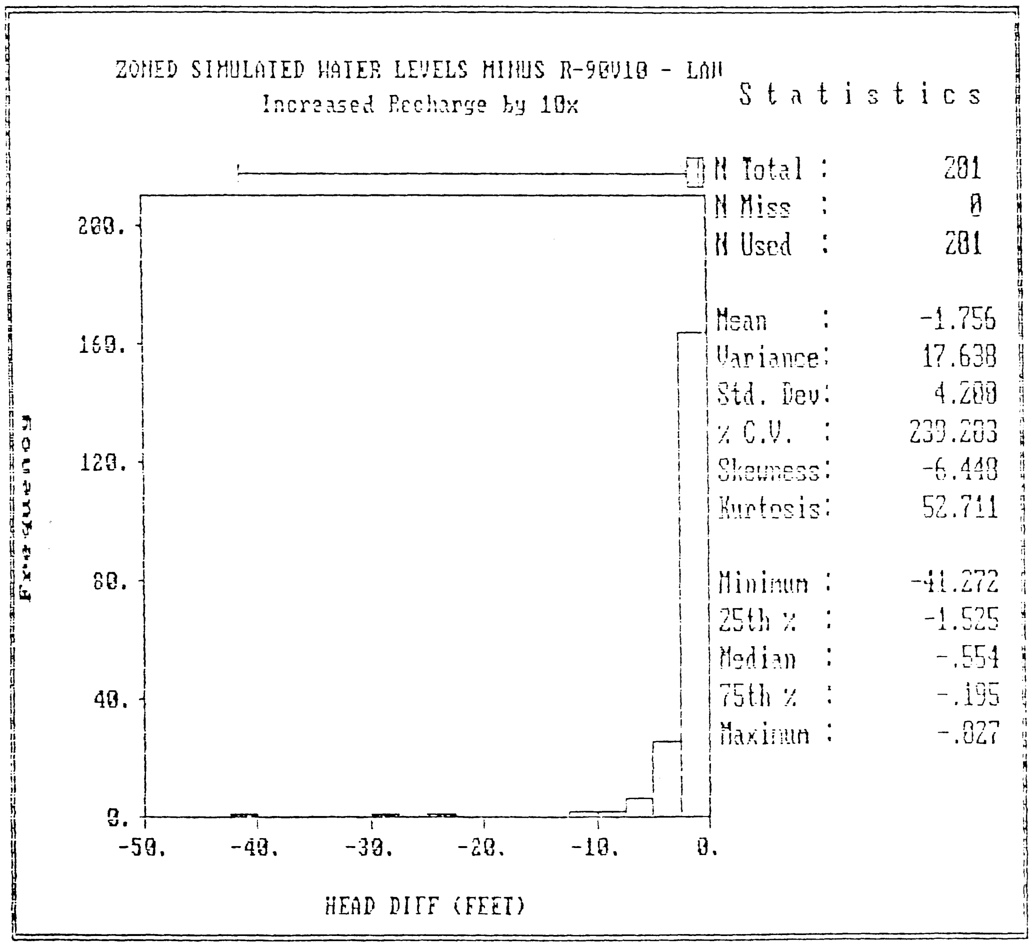

ZONED SIMULATED WATER LEVELS MINUS R-9099 - UAU
Decreased Recharge by 15%
Statistics
N Total : 154
N Miss : 0
N Used : 154
Mean : 3.017
Variance: 3.396
Std. Dev: 1.843
% C.V. : 61.089
Skewness: 1.116
Kurtosis: 3.513
Minimum : .466
25th % : 1.737
Median : 2.464
75th % : 3.849
Maximum : 8.608
Frequency
0.
10.
20.
30.
40.
0.
3.
6.
9.
HEAD DIFF (FEET)


ZONED SIMULATED WATER LEVELS MINUS R-90V9 - LAU
Decreased Recharge by 15%
Statistics
N Total : 201
N Miss : 0
N Used : 201
Mean : 1.754
Variance: 29.343
Std. Dev: 5.417
% C.V. : 308.870
Skewness: 9.888
Kurtosis: 96.657
Minimum : -.887
25th % : .109
Median : .525
75th % : 1.506
Maximum : 63.987
Frequency
200.
160.
120.
80.
40.
0.
-20.
0.
20.
40.
60.
80.
HEAD DIFF (FEET)



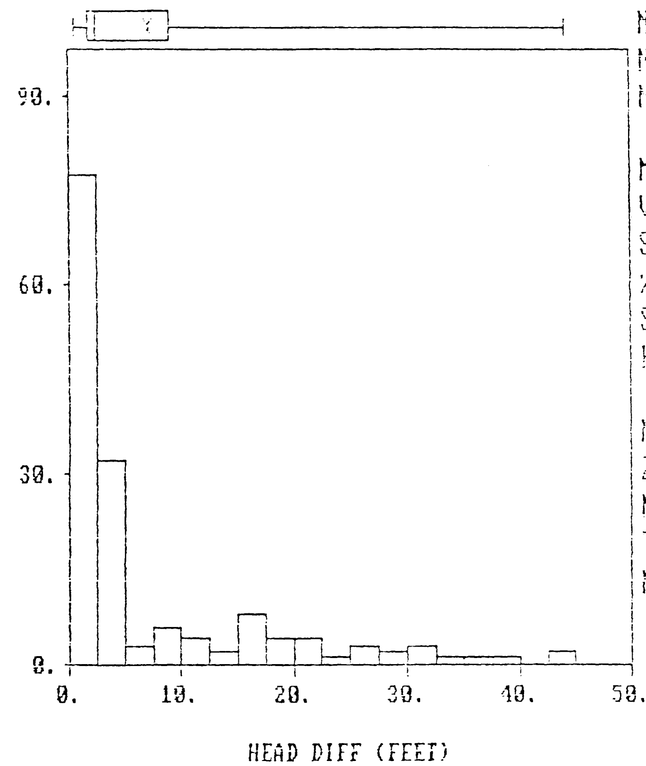
Statistics

N Total :	154
N Miss :	0
N Used :	154
Mean :	-3.039
Variance:	3.458
Std. Dev:	1.860
% C.V. :	61.215
Skewness:	-1.069
Kurtosis:	3.278
Minimum :	-8.545
25th % :	-3.927
Median :	-2.471
75th % :	-1.742
Maximum :	-.474



ZONED SIMULATED WATER LEVELS MINUS R-90V18 - LAN
Increased Recharge by 10x
Frequency
200.
160.
120.
80.
40.
0.
-50.
-40.
-30.
-20.
-10.
0.
HEAD DIFF (FEET)
Statistics
N Total : 201
N Miss : 0
N Used : 201
Mean : -1.756
Variance: 17.638
Std. Dev: 4.200
% C.V. : 239.203
Skewness: -6.448
Kurtosis: 52.711
Minimum : -41.272
25th % : -1.525
Median : -.554
75th % : -.195
Maximum : -.027

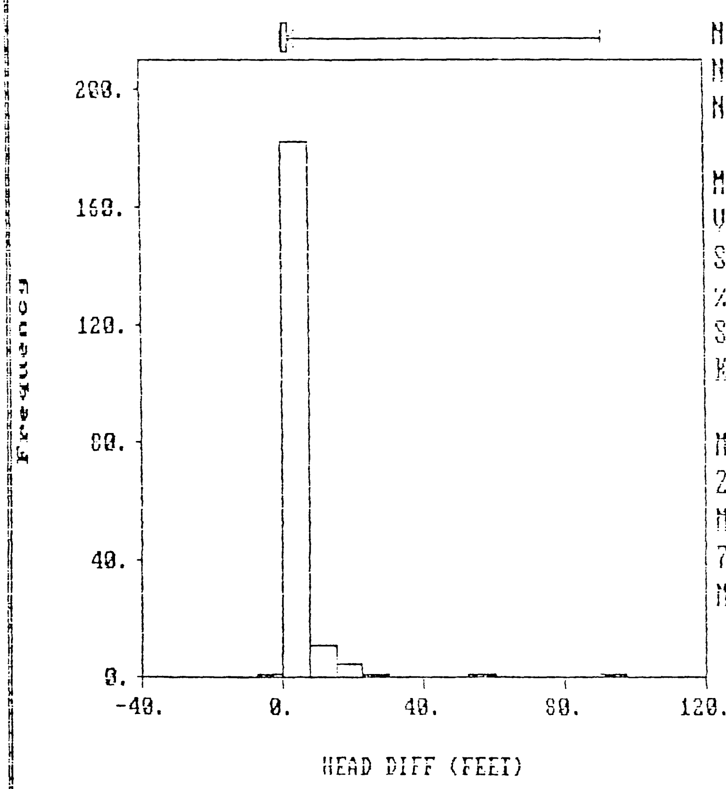
ZONED SIMULATED WATER LEVELS MINUS R-90V11 - UAN
Decreased SCIP Recharge 78% and Model 15%



Statistics

N Total :	154
N Miss :	0
N Used :	154
Mean :	7.220
Variance:	92.733
Std. Dev:	9.630
% C.V. :	133.381
Skewness:	1.929
Kurtosis:	6.029
Minimum :	.466
25th % :	1.747
Median :	2.494
75th % :	9.129
Maximum :	44.223

ZONED SIMULATED WATER LEVELS MINUS R-90V11 - LAN
Decreased SCIP Recharge 78% and Model 15%

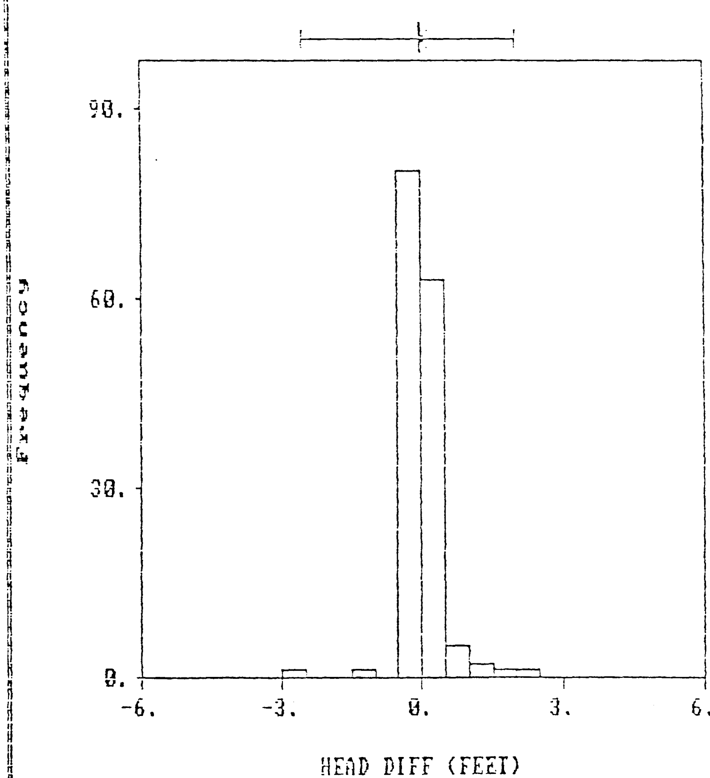


Statistics

N Total :	201
N Miss :	0
N Used :	201
Mean :	2.802
Variance:	68.118
Std. Dev:	8.253
% C.V. :	294.528
Skewness:	7.687
Kurtosis:	74.484
Minimum :	-.887
25th % :	.247
Median :	.655
75th % :	1.978
Maximum :	91.220

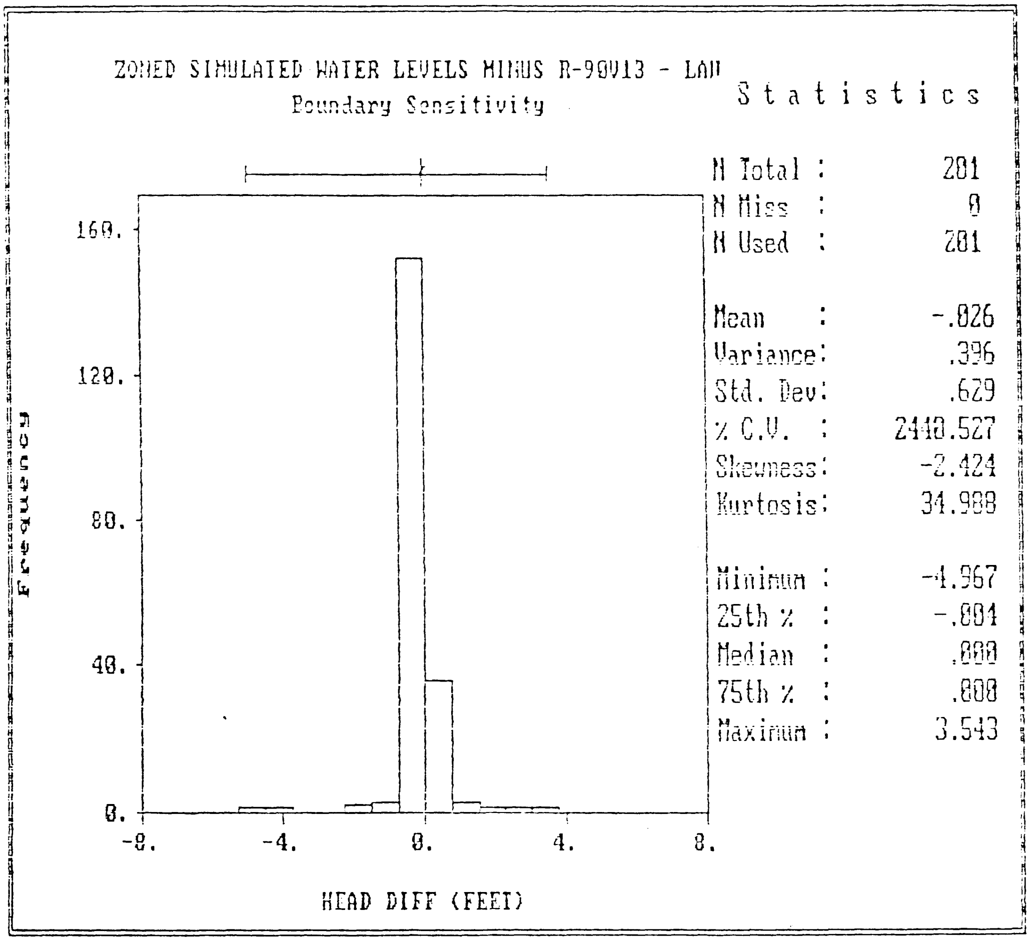
ZONED SIMULATED WATER LEVELS MINUS R-90V13 - UAN

Boundary Sensitivity

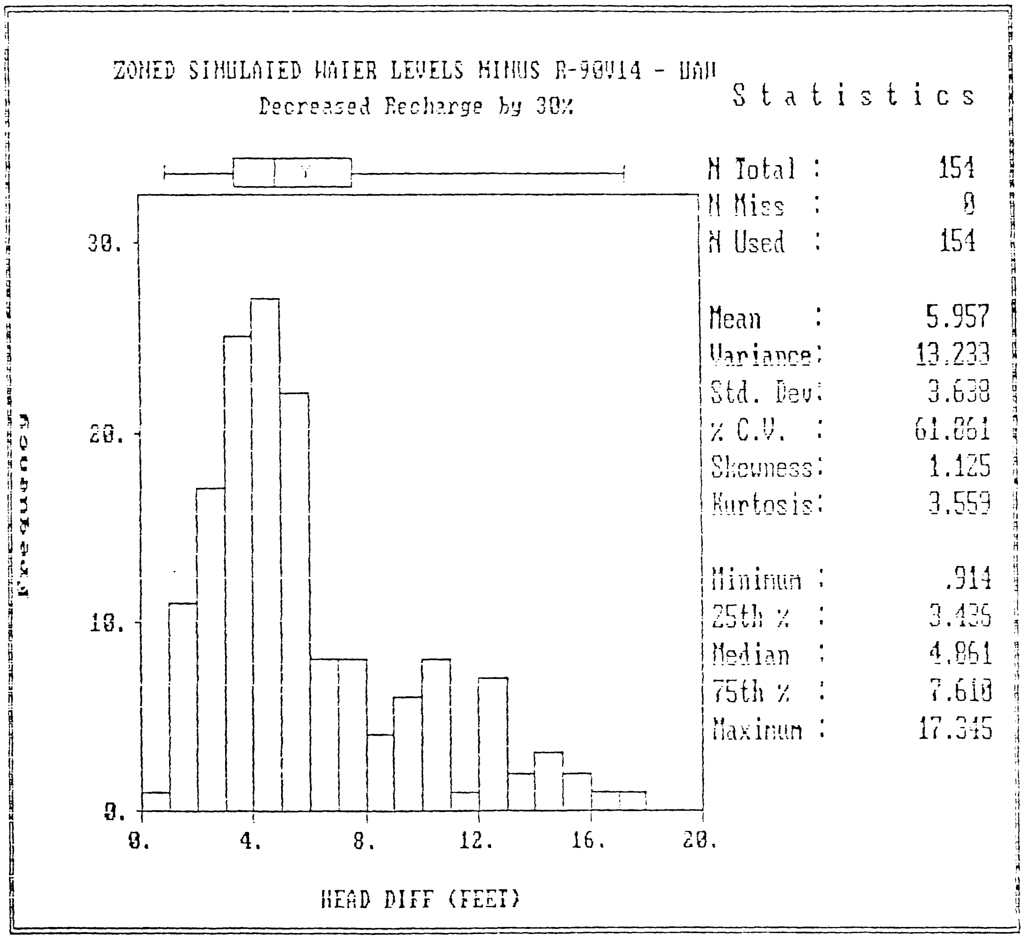


Statistics

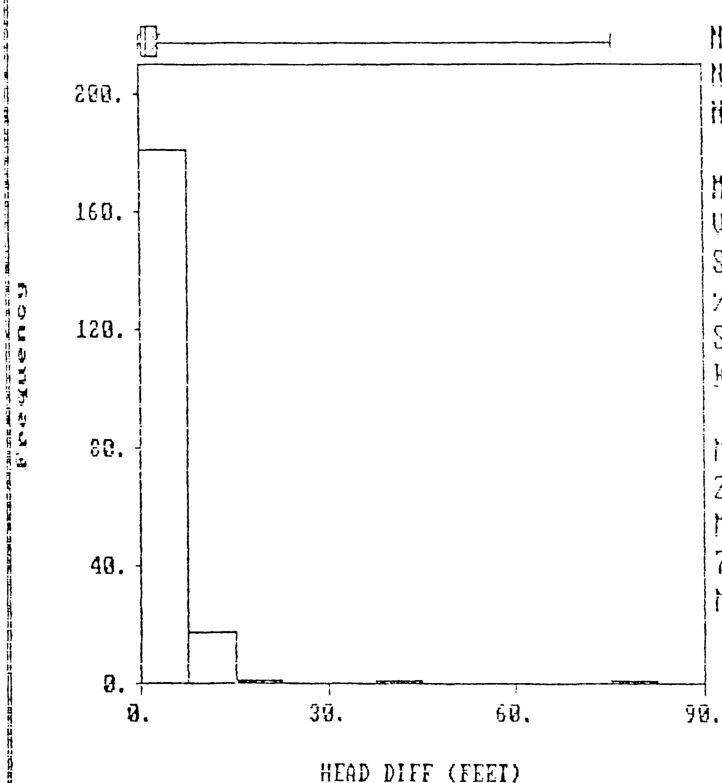
N Total :	154
N Miss :	0
N Used :	154
Mean :	.063
Variance:	.135
Std. Dev:	.367
% C.V. :	586.515
Skewness:	-.309
Kurtosis:	28.202
Minimum :	-2.542
25th % :	-.001
Median :	.000
75th % :	.040
Maximum :	2.002



ZONED SIMULATED WATER LEVELS MINUS R-90V13 - LAN
Boundary Sensitivity
Frequency
160.
120.
80.
40.
0.
-8.
-4.
0.
4.
8.
HEAD DIFF (FEET)
Statistics
N Total : 201
N Miss : 0
N Used : 201
Mean : -.026
Variance: .396
Std. Dev: .629
% C.V. : 2440.527
Skewness: -2.424
Kurtosis: 34.988
Minimum : -4.967
25th % : -.004
Median : .000
75th % : .000
Maximum : 3.543

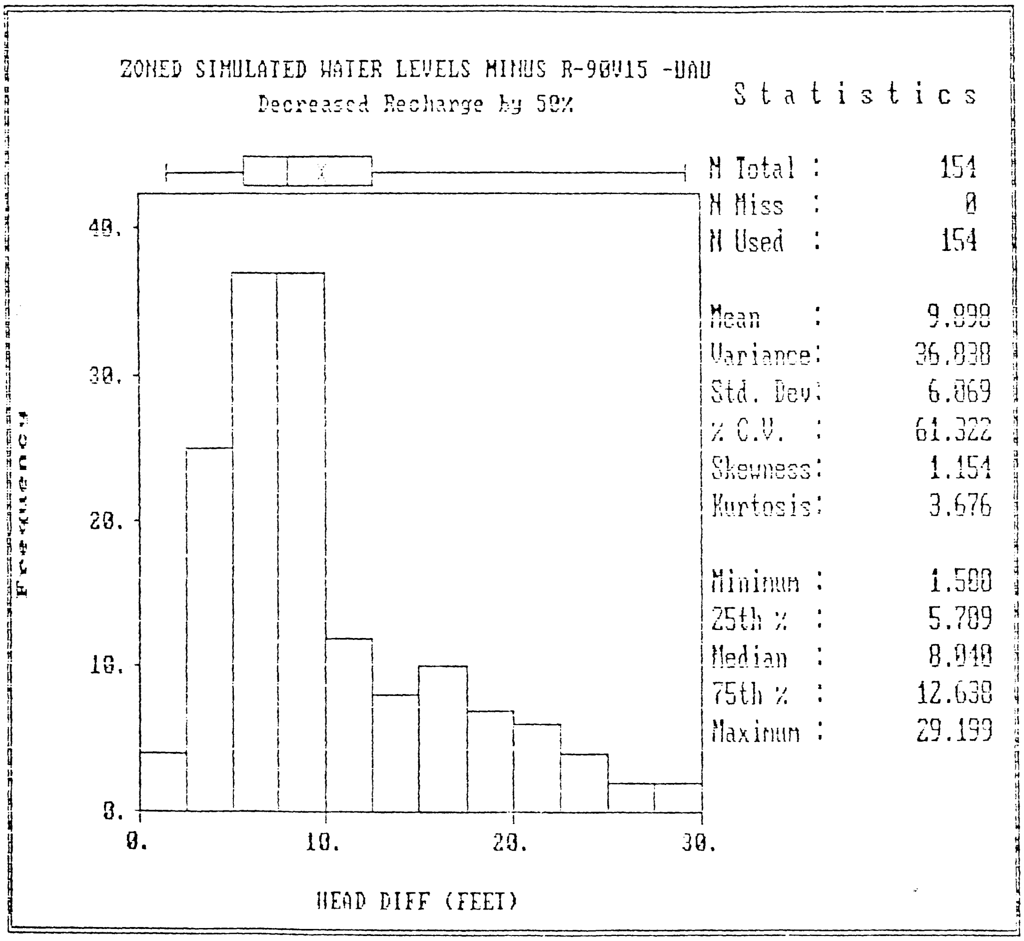

ZONED SIMULATED WATER LEVELS MINUS R-90V14 - UAH
Decreased Recharge by 30%
Statistics
N Total : 154
N Miss : 0
N Used : 154
Mean : 5.957
Variance : 13.233
Std. Dev : 3.638
% C.V. : 61.061
Skewness : 1.125
Kurtosis : 3.559
Minimum : .914
25th % : 3.435
Median : 4.861
75th % : 7.610
Maximum : 17.345
30.
20.
10.
0.
0.
4.
8.
12.
16.
20.
HEAD DIFF (FEET)

ZONED SIMULATED WATER LEVELS MINUS R-90V14 - LAM
Decreased Recharge 30%



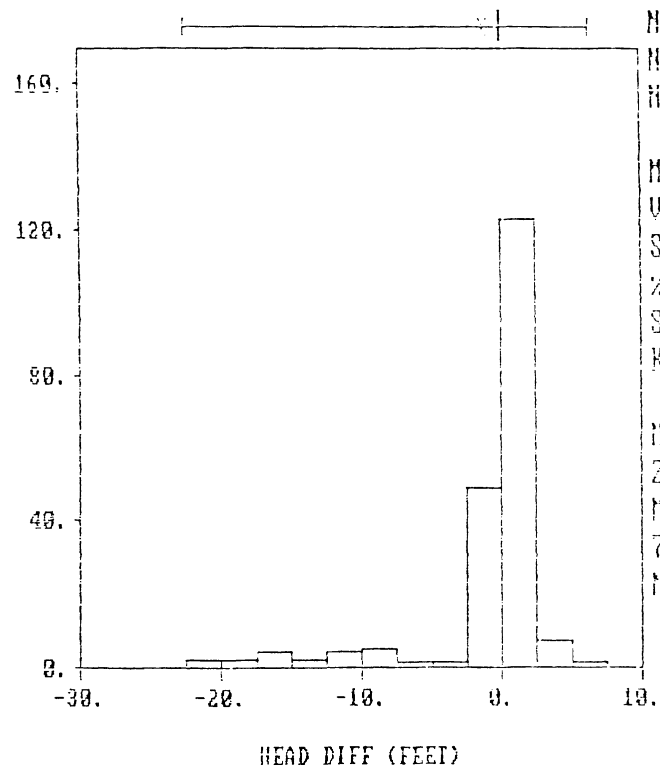
Statistics

N Total :	201
N Miss :	0
N Used :	201
Mean :	2.914
Variance:	44.211
Std. Dev:	6.649
% C.V. :	228.178
Skewness:	7.875
Kurtosis:	79.319
Minimum :	.030
25th % :	.377
Median :	1.068
75th % :	2.980
Maximum :	75.558


ZONED SIMULATED WATER LEVELS MINUS R-90V15 -UAU
Decreased Recharge by 50%
Statistics
N Total : 154
N Miss : 0
N Used : 154
Mean : 9.898
Variance: 36.838
Std. Dev: 6.069
% C.V. : 61.322
Skewness: 1.154
Kurtosis: 3.676
Minimum : 1.500
25th % : 5.709
Median : 8.040
75th % : 12.638
Maximum : 29.199
Frequency
0.
10.
20.
30.
40.
0.
10.
20.
30.
HEAD DIFF (FEET)

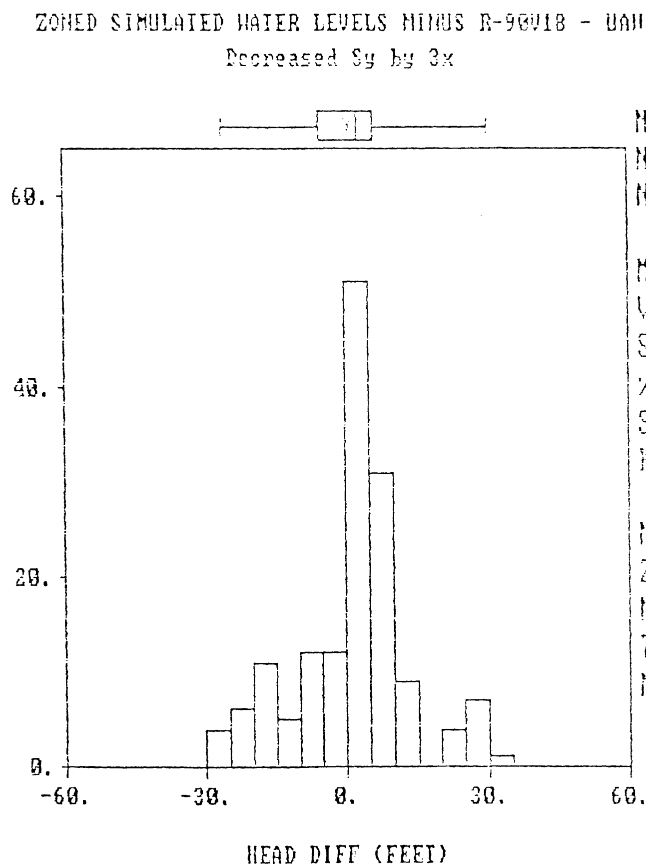
ZONED SIMULATED WATER LEVELS MINUS R-90V18 - LAN

Decreased Sy and S by 3x



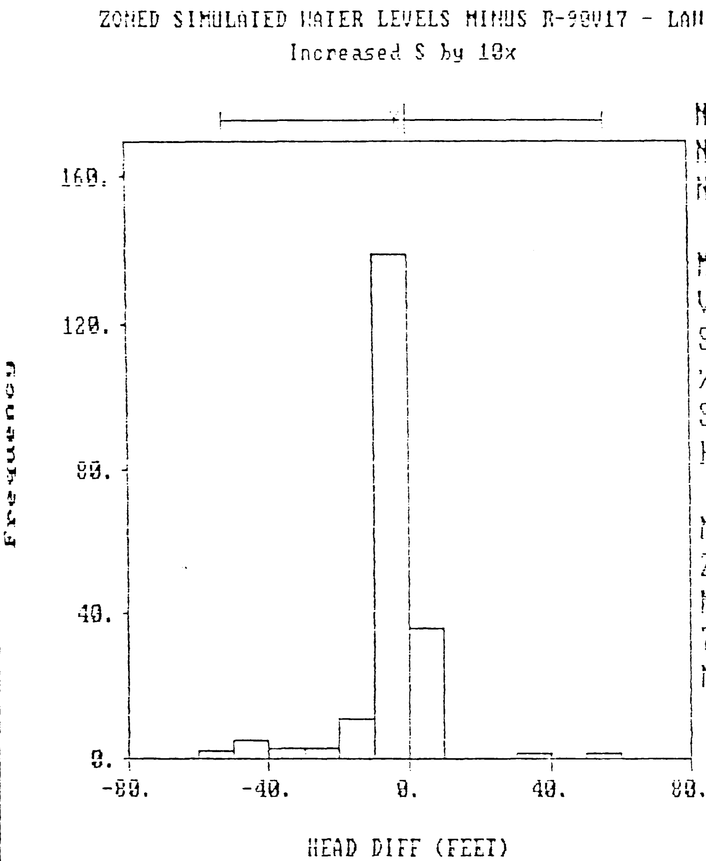
Statistics

N Total :	201
N Miss :	0
N Used :	201
Mean :	-1.176
Variance:	19.527
Std. Dev:	4.419
% C.V. :	375.803
Skewness:	-2.920
Kurtosis:	11.470
Minimum :	-22.459
25th % :	-.041
Median :	.021
75th % :	.062
Maximum :	6.300



Statistics

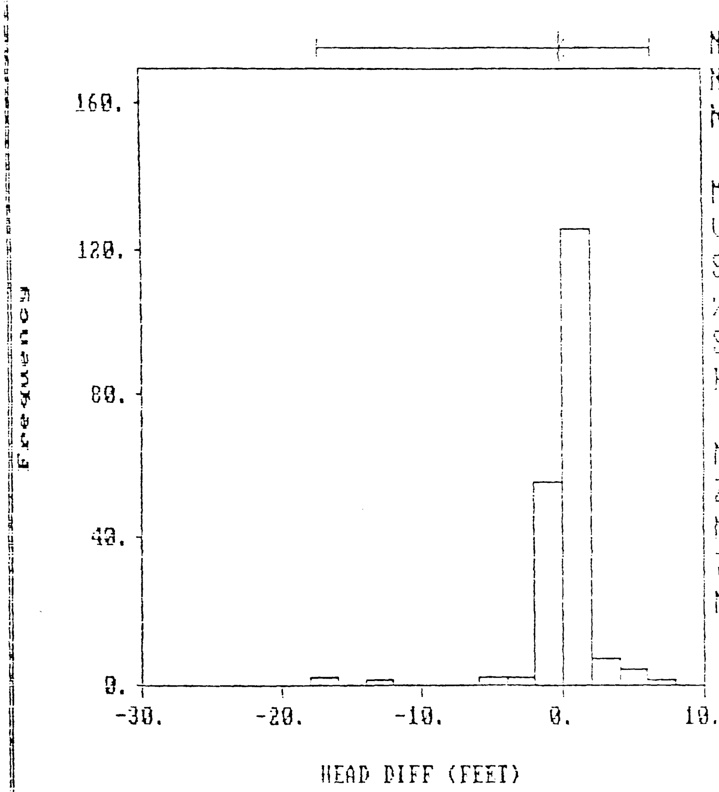
N Total :	153
N Miss :	0
N Used :	153
Mean :	1.073
Variance:	141.785
Std. Dev:	11.907
% C.V. :	1109.252
Skewness:	-.161
Kurtosis:	3.409
Minimum :	-26.009
25th % :	-5.000
Median :	2.093
75th % :	6.220
Maximum :	30.232



Statistics

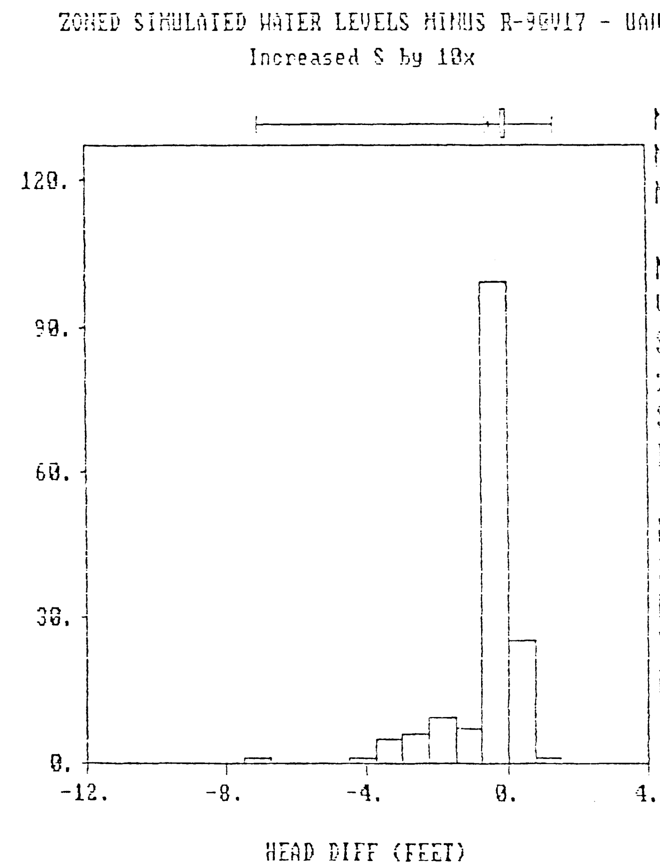
N Total :	201
N Miss :	0
N Used :	201
Mean :	-3.213
Variance:	130.037
Std. Dev:	11.403
% C.V. :	354.941
Skewness:	-1.538
Kurtosis:	12.762
Minimum :	-52.198
25th % :	-.201
Median :	-.005
75th % :	.008
Maximum :	56.204

ZONED SIMULATED WATER LEVELS MINUS R-90V16 - LAW
Reduced S by 10x



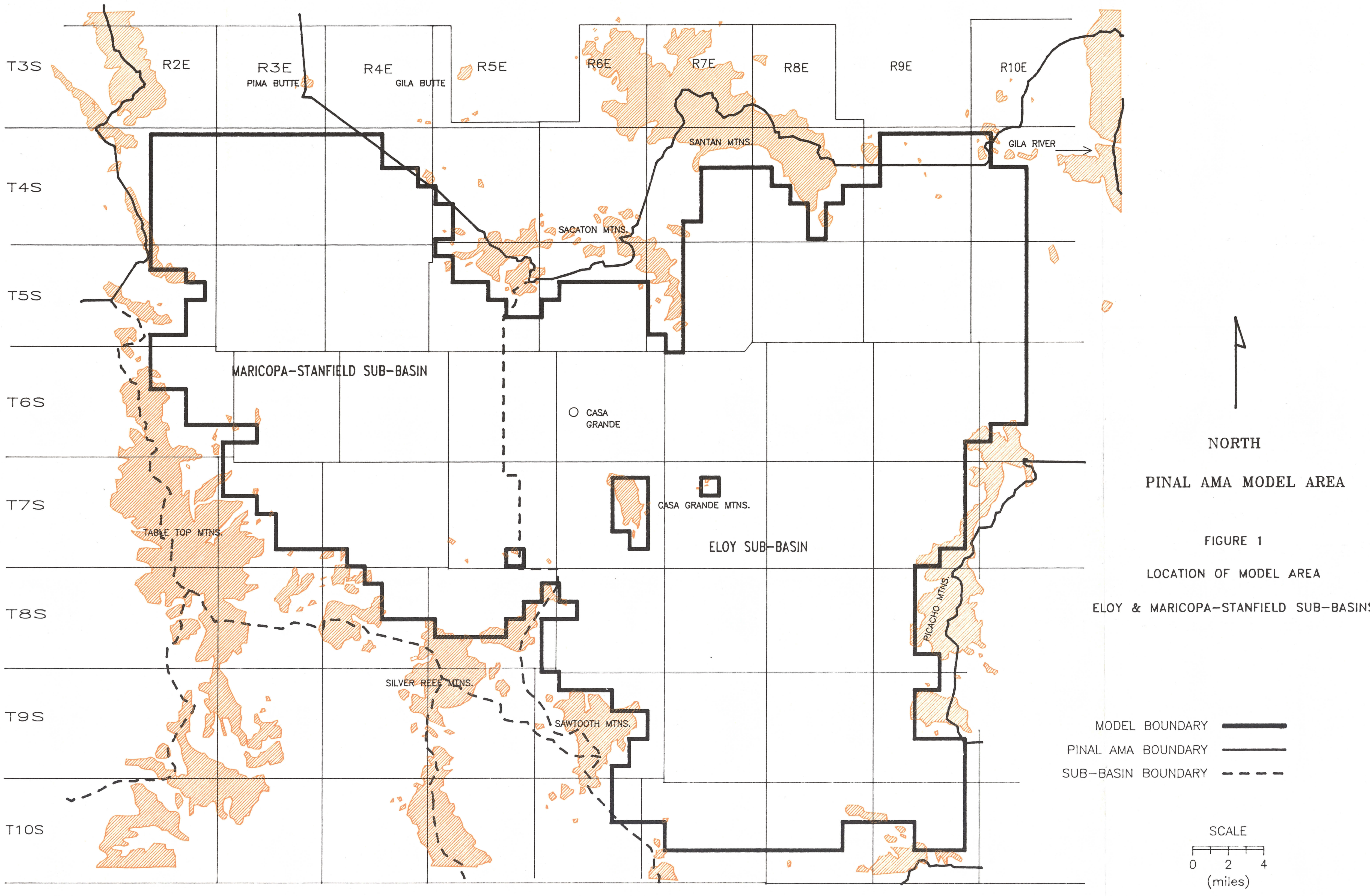
Statistics

N Total :	201
N Miss :	0
N Used :	201
Mean :	-.001
Variance:	5.092
Std. Dev:	2.257
% C.V. :	354067.000
Skewness:	-4.731
Kurtosis:	37.378
Minimum :	-17.236
25th % :	.000
Median :	.001
75th % :	.029
Maximum :	6.391



Statistics

N Total :	154
N Miss :	0
N Used :	154
Mean :	-.460
Variance:	1.200
Std. Dev:	1.095
% C.V. :	238.068
Skewness:	-2.887
Kurtosis:	12.680
Minimum :	-7.084
25th % :	-.154
Median :	.009
75th % :	.088
Maximum :	1.331

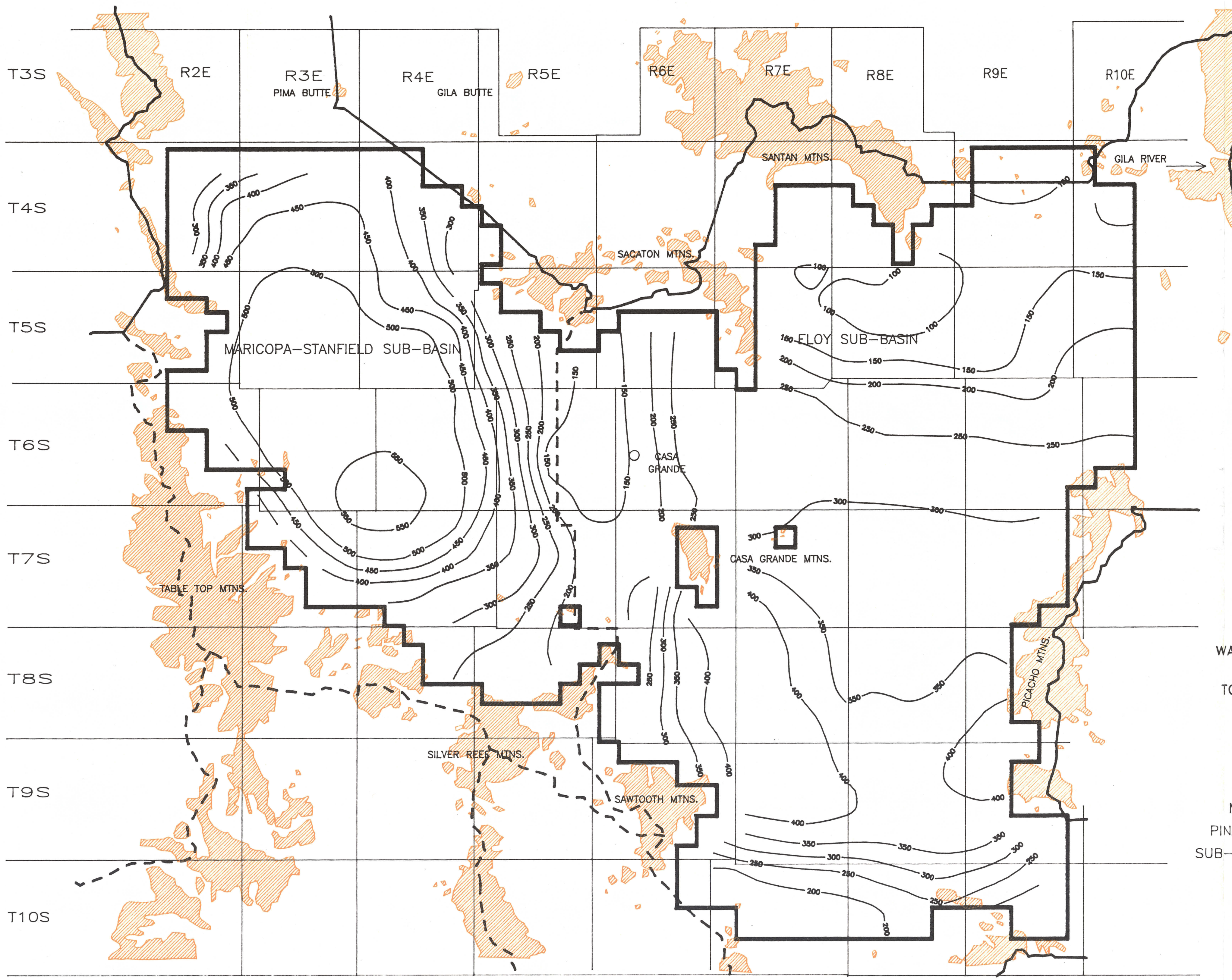


PINAL AMA MODEL AREA

FIGURE 1

LOCATION OF MODEL AREA

ELOY & MARICOPA-STANFIELD SUB-BASINS



NORTH

PINAL AMA MODEL AREA

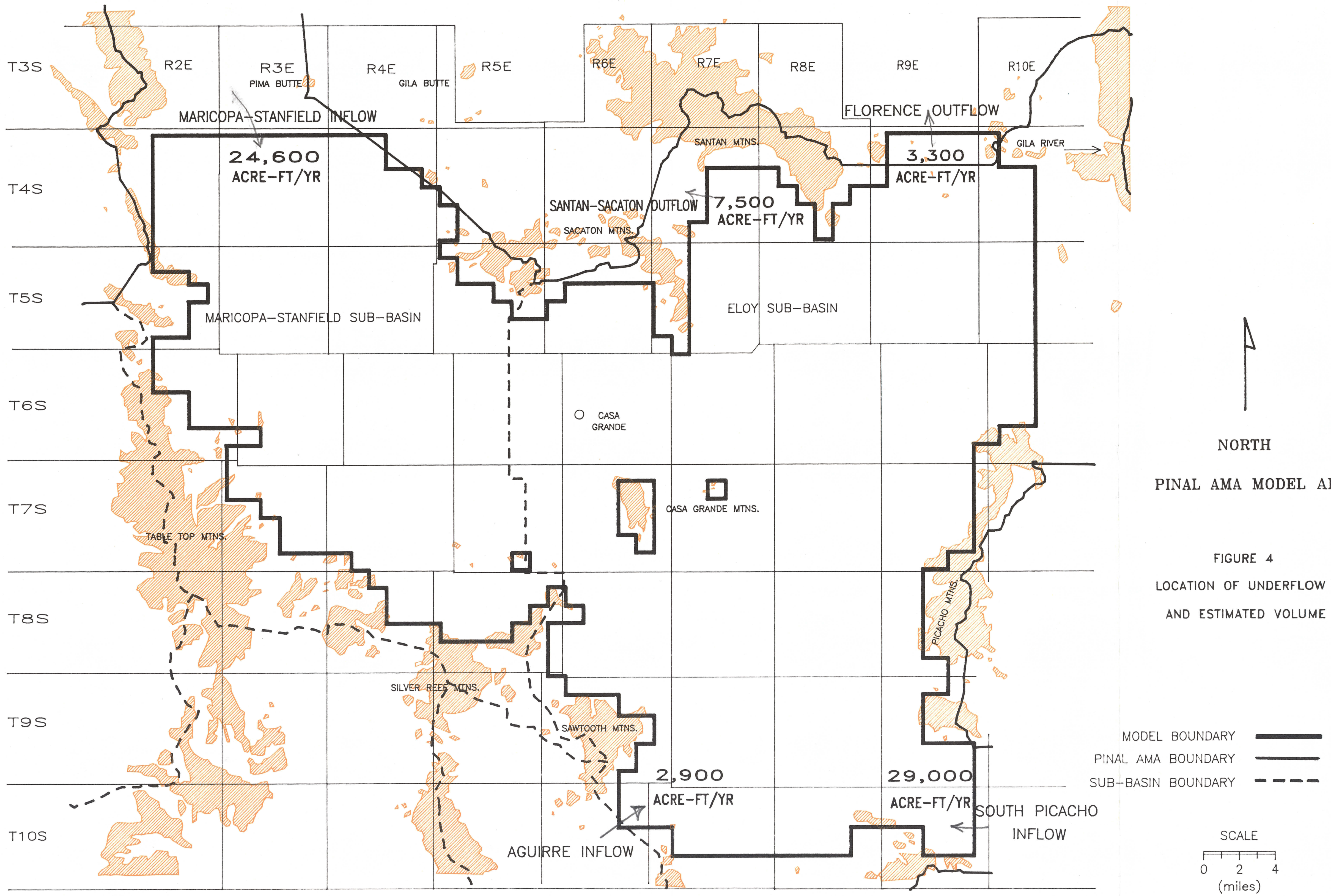
FIGURE 3

WATER LEVEL CHANGE FROM CIRCA 1900 TO WINTER 1984–85 – LAYER 2 (LCU)

MODEL BOUNDARY
PINAL AMA BONDARY
SUB–BASIN BOUNDARY

SCALE
0 2 4
(miles)

Adapted from Thomsen and Baldys (1985) and ADWR–GWSI water level data

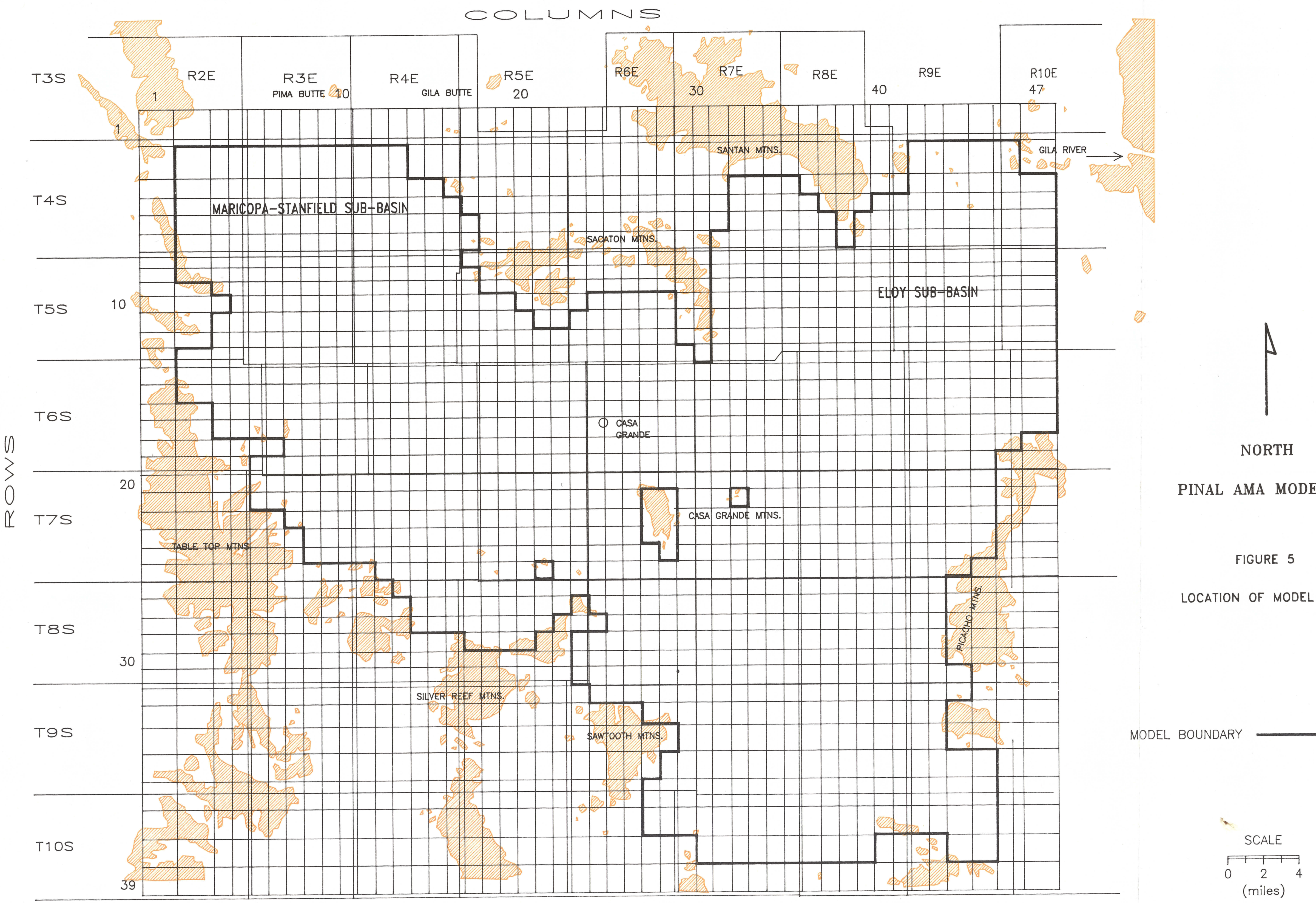


PINAL AMA MODEL AREA

FIGURE 4

LOCATION OF UNDERFLOW

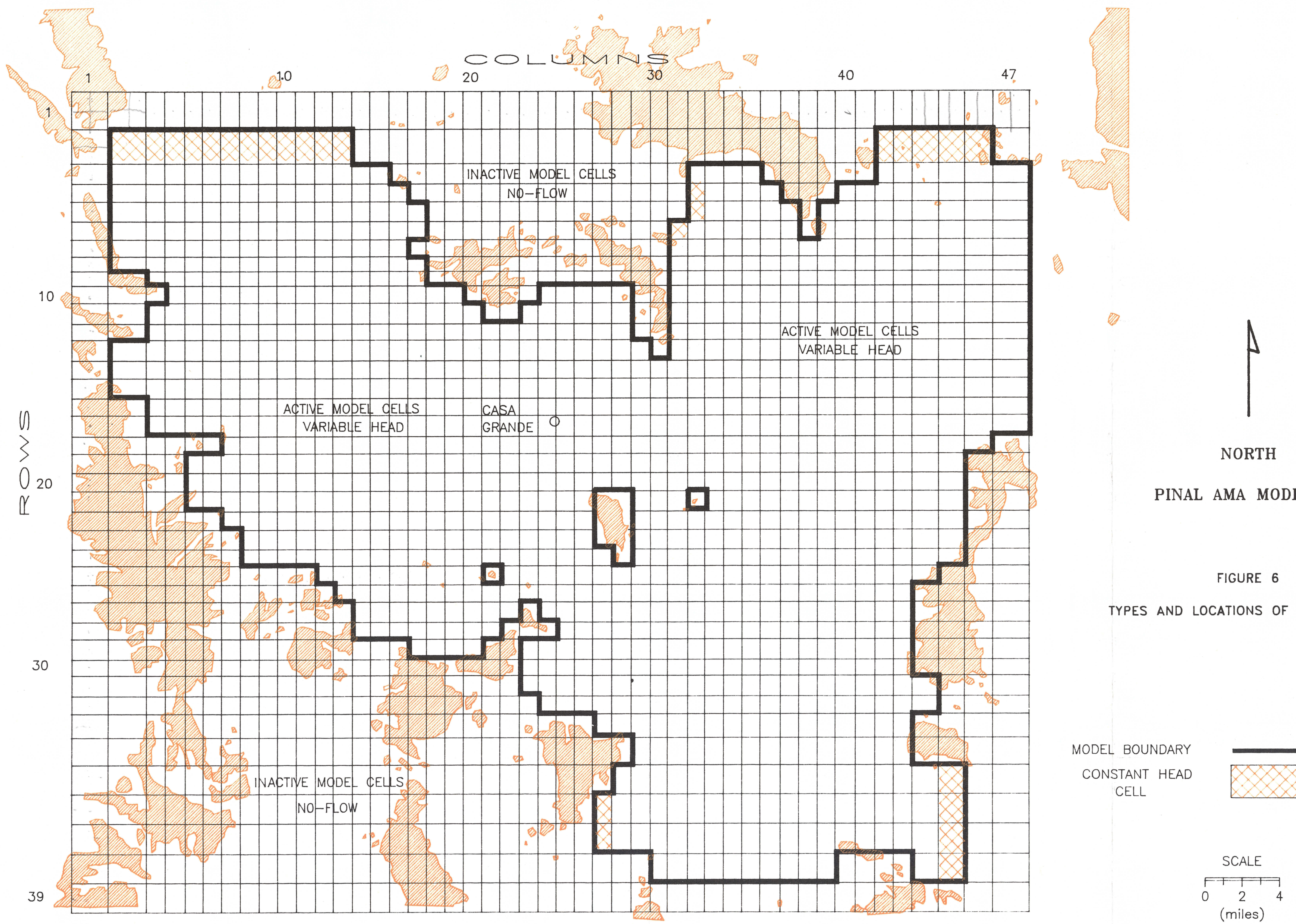
AND ESTIMATED VOLUME



PINAL AMA MODEL AREA

FIGURE 5

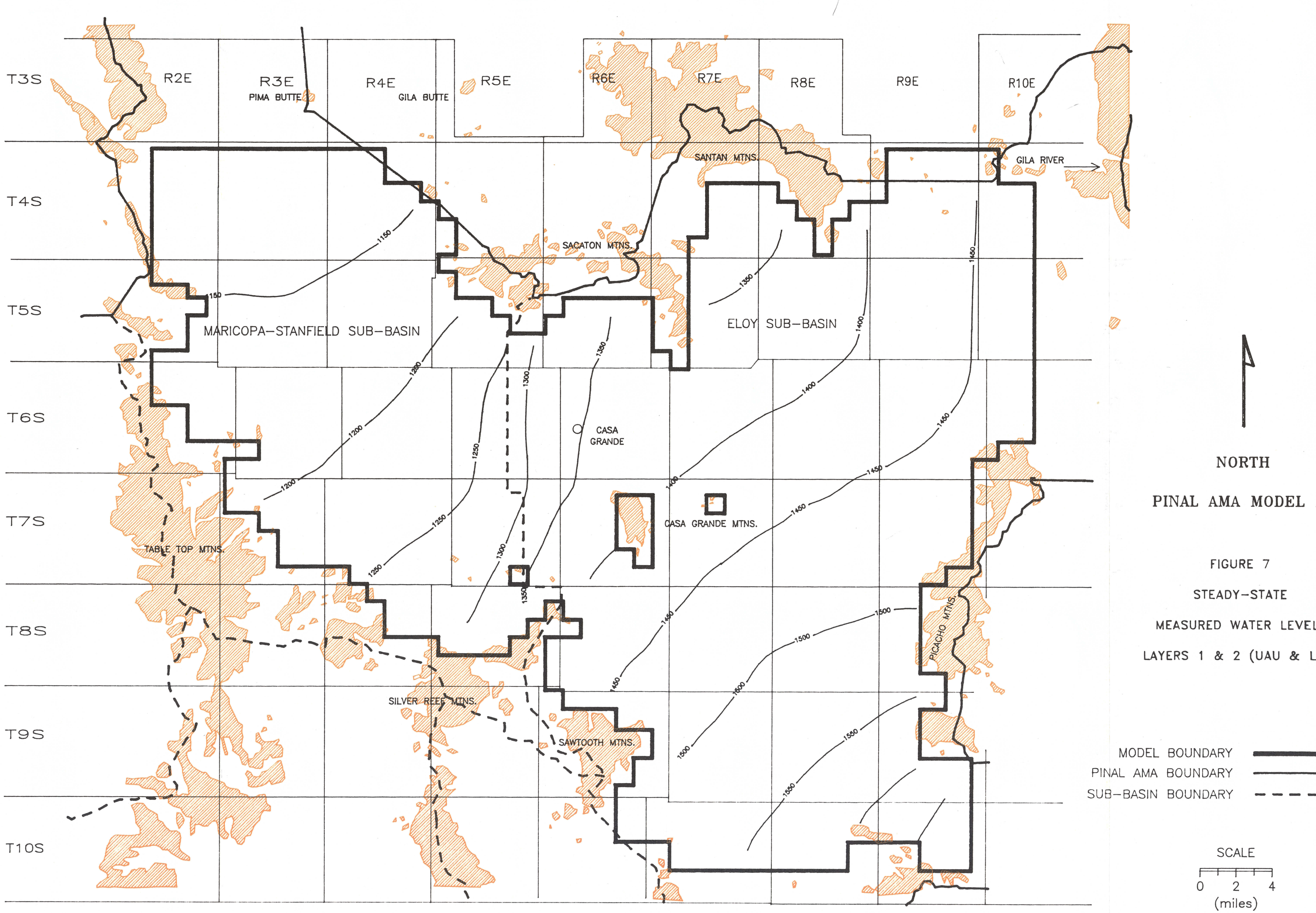
LOCATION OF MODEL GRID



PINAL AMA MODEL AREA

FIGURE 6

TYPES AND LOCATIONS OF MODEL CELLS



PINAL AMA MODEL AREA

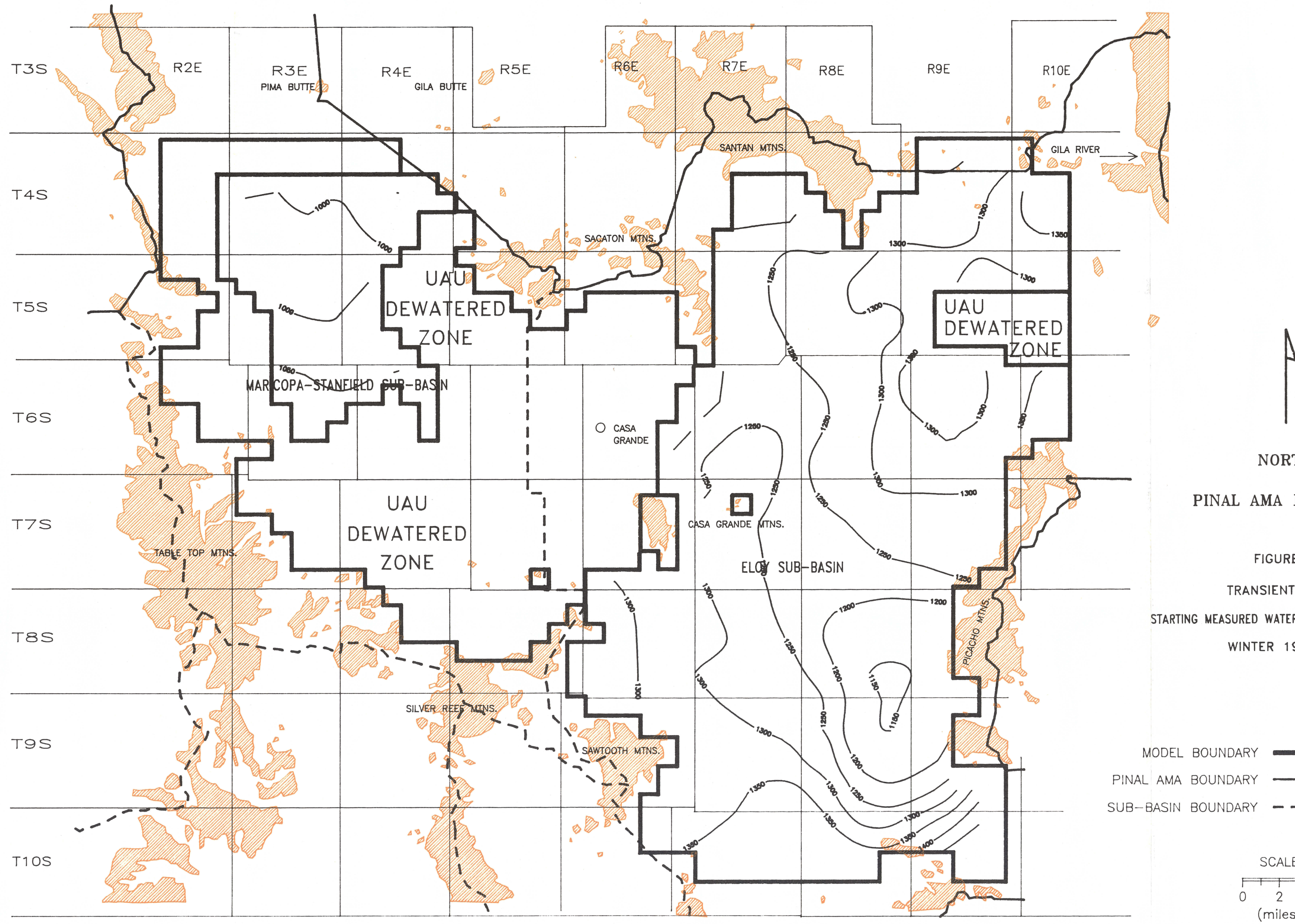
FIGURE 7

STEADY-STATE

MEASURED WATER LEVELS

LAYERS 1 & 2 (UAU & LCU)

Adapted from Thomsen and Baldys (1985)



PINAL AMA MODEL AREA

FIGURE 8

TRANSIENT-STATE

STARTING MEASURED WATER LEVELS-LAYER 1 (UAU)

WINTER 1984-85

MODEL BOUNDARY

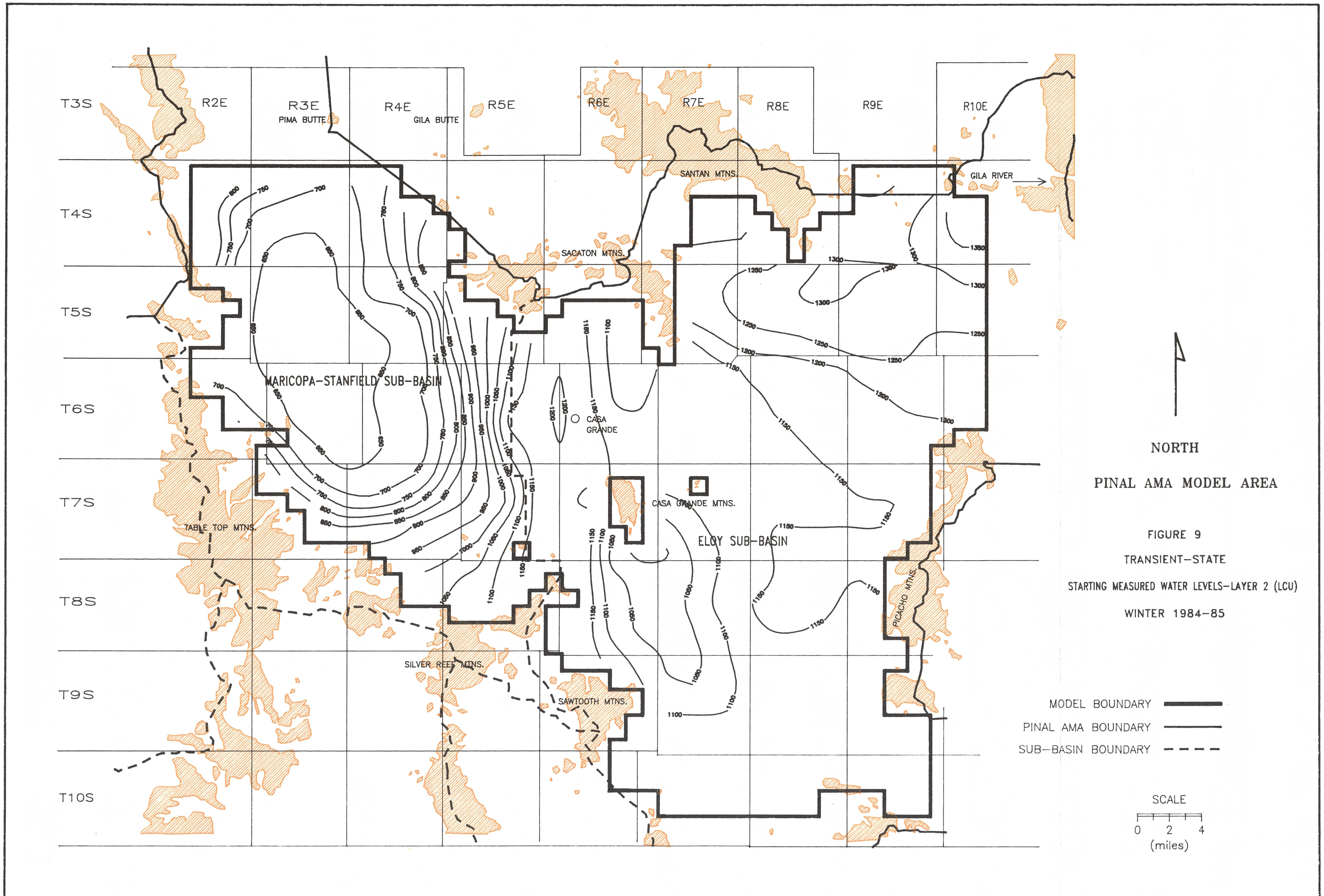
PINAL AMA BOUNDARY

SUB-BASIN BOUNDARY

SCALE

0 2 4

(miles)



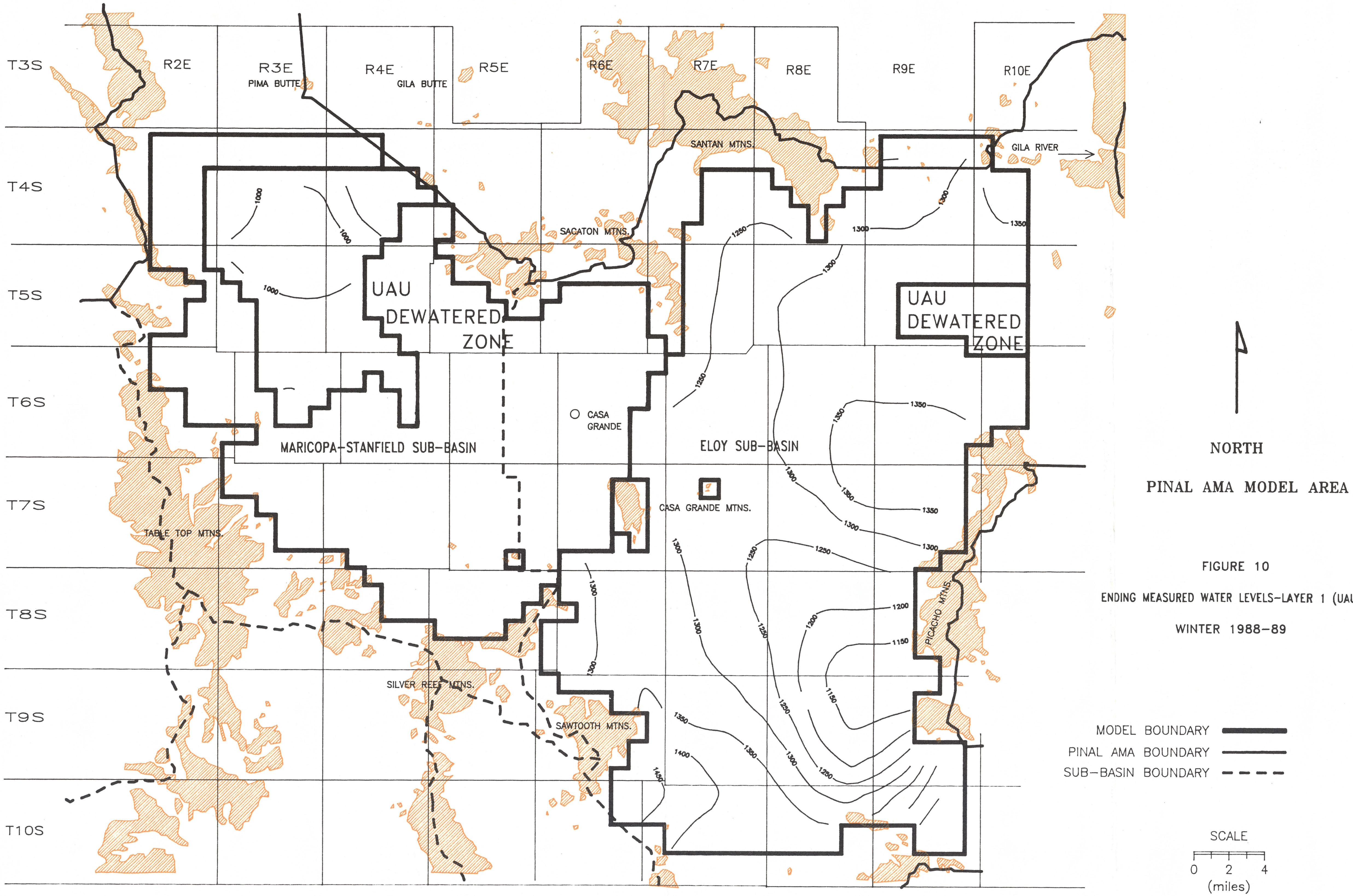
PINAL AMA MODEL AREA

FIGURE 9

TRANSIENT-STATE

STARTING MEASURED WATER LEVELS-LAYER 2 (LCU)

WINTER 1984-85

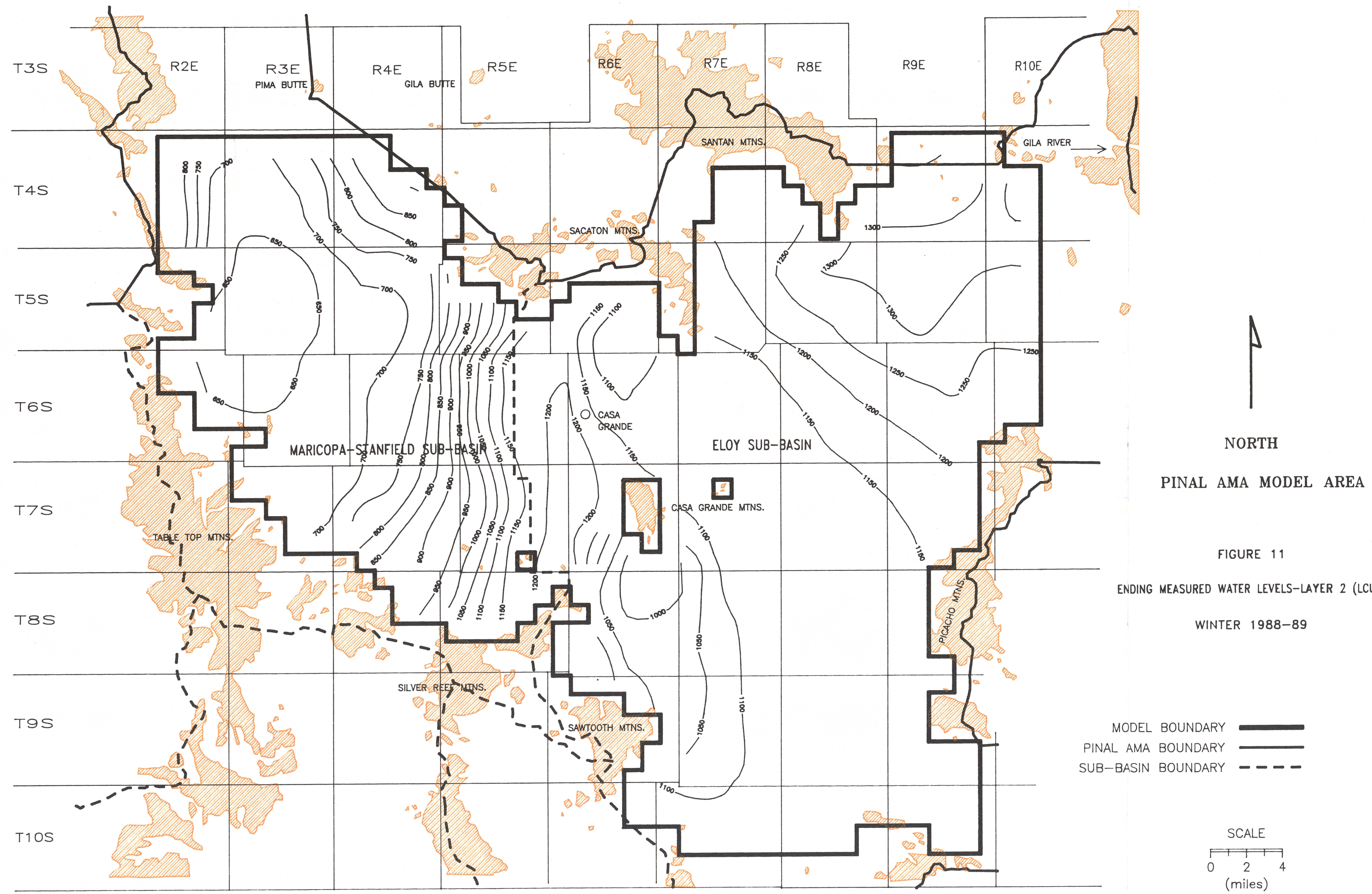


PINAL AMA MODEL AREA

FIGURE 10

ENDING MEASURED WATER LEVELS-LAYER 1 (UAU)

WINTER 1988-89



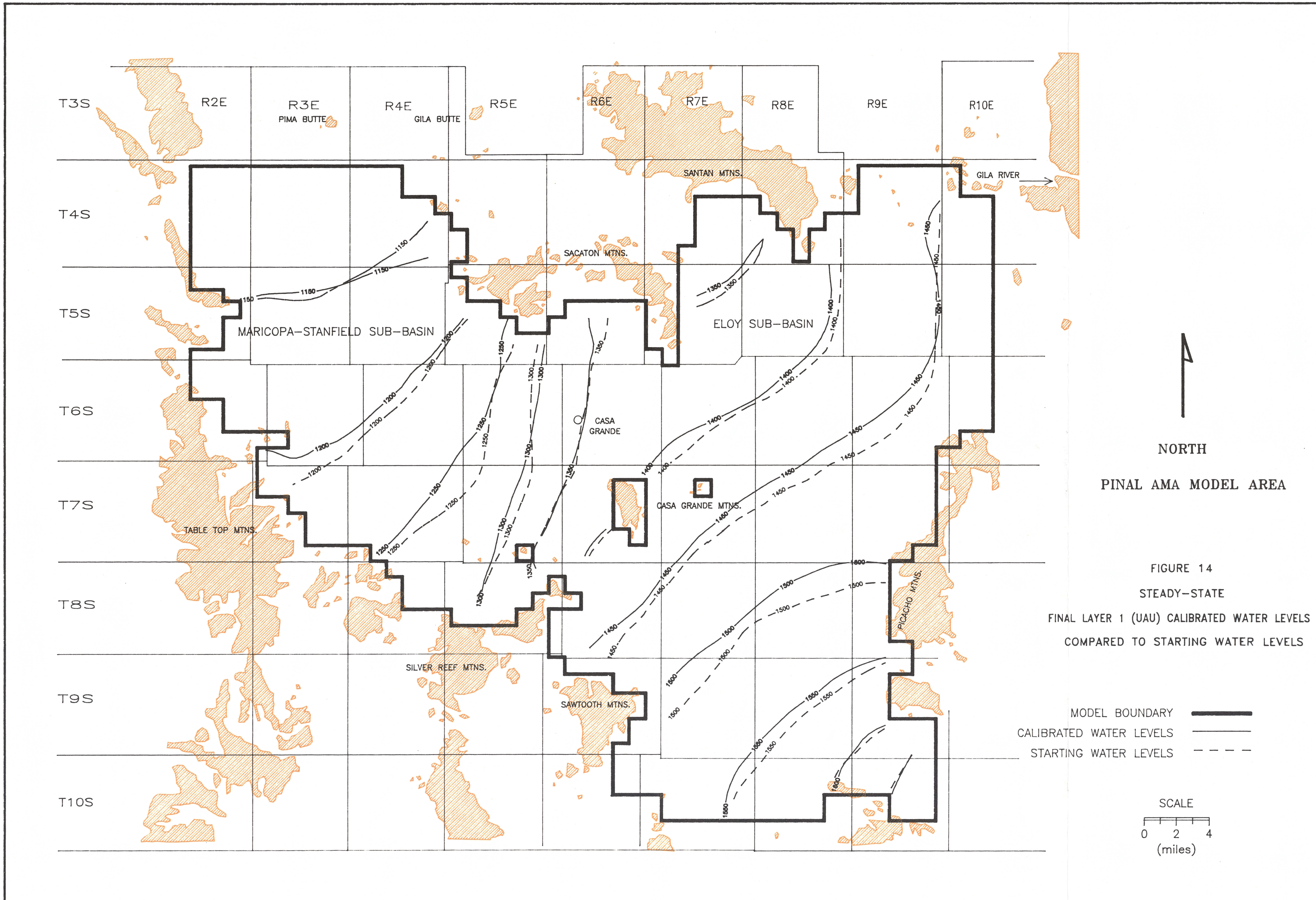
NORTH

PINAL AMA MODEL AREA

FIGURE 11

ENDING MEASURED WATER LEVELS-LAYER 2 (LCU)

WINTER 1988-89



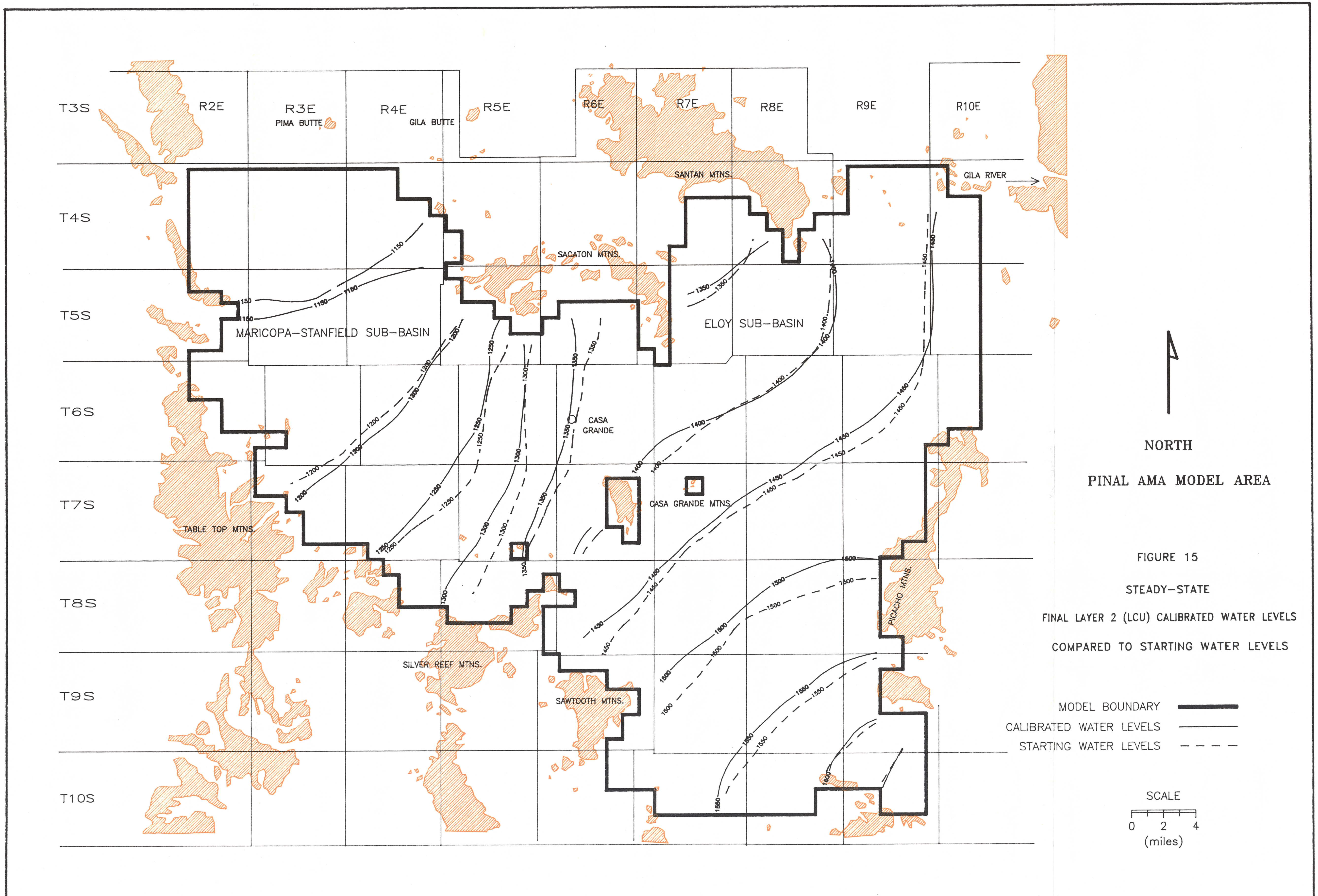
PINAL AMA MODEL AREA

FIGURE 14

STEADY–STATE

FINAL LAYER 1 (UAU) CALIBRATED WATER LEVELS

COMPARED TO STARTING WATER LEVELS



PINAL AMA MODEL AREA

FIGURE 15

STEADY–STATE

FINAL LAYER 2 (LCU) CALIBRATED WATER LEVELS

COMPARED TO STARTING WATER LEVELS

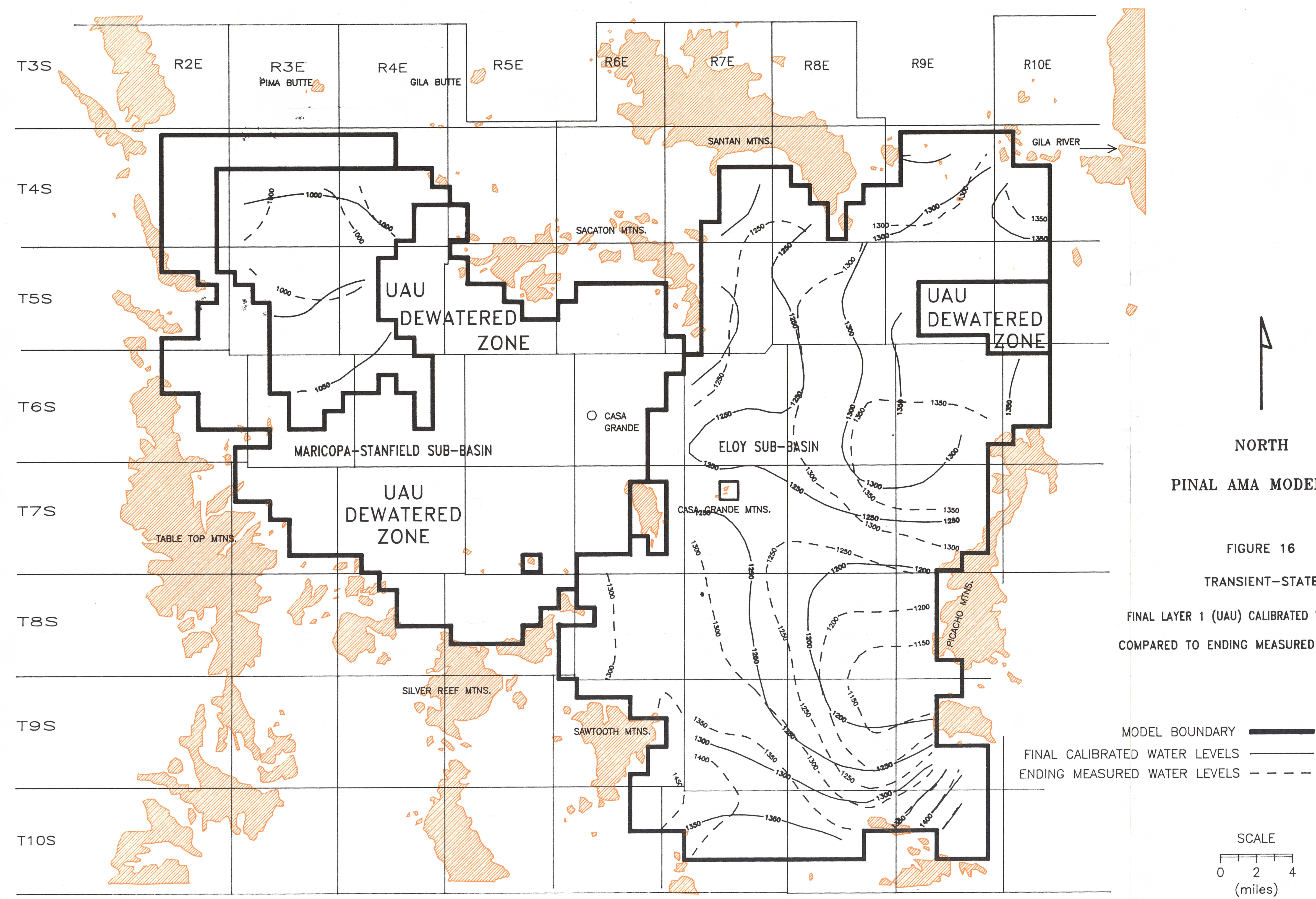
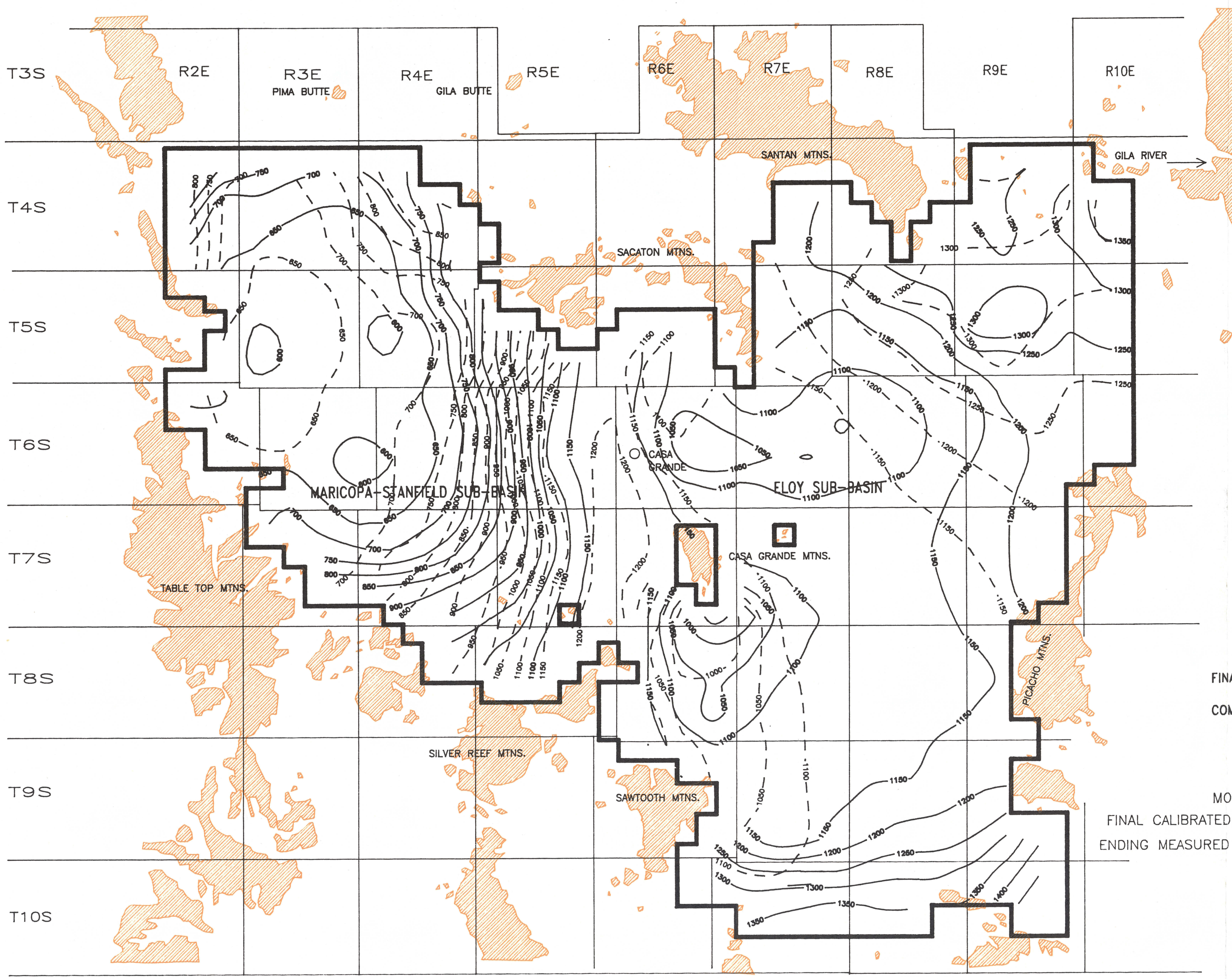


FIGURE 16

TRANSIENT-STATE

FINAL LAYER 1 (UAU) CALIBRATED WATER LEVELS

COMPARED TO ENDING MEASURED WATER LEVELS



NORTH

PINAL AMA MODEL AREA

FIGURE 17

TRANSIENT-STATE

FINAL LAYER 2 (LCU) CALIBRATED WATER LEVELS

COMPARED TO ENDING MEASURED WATER LEVELS

MODEL BOUNDARY

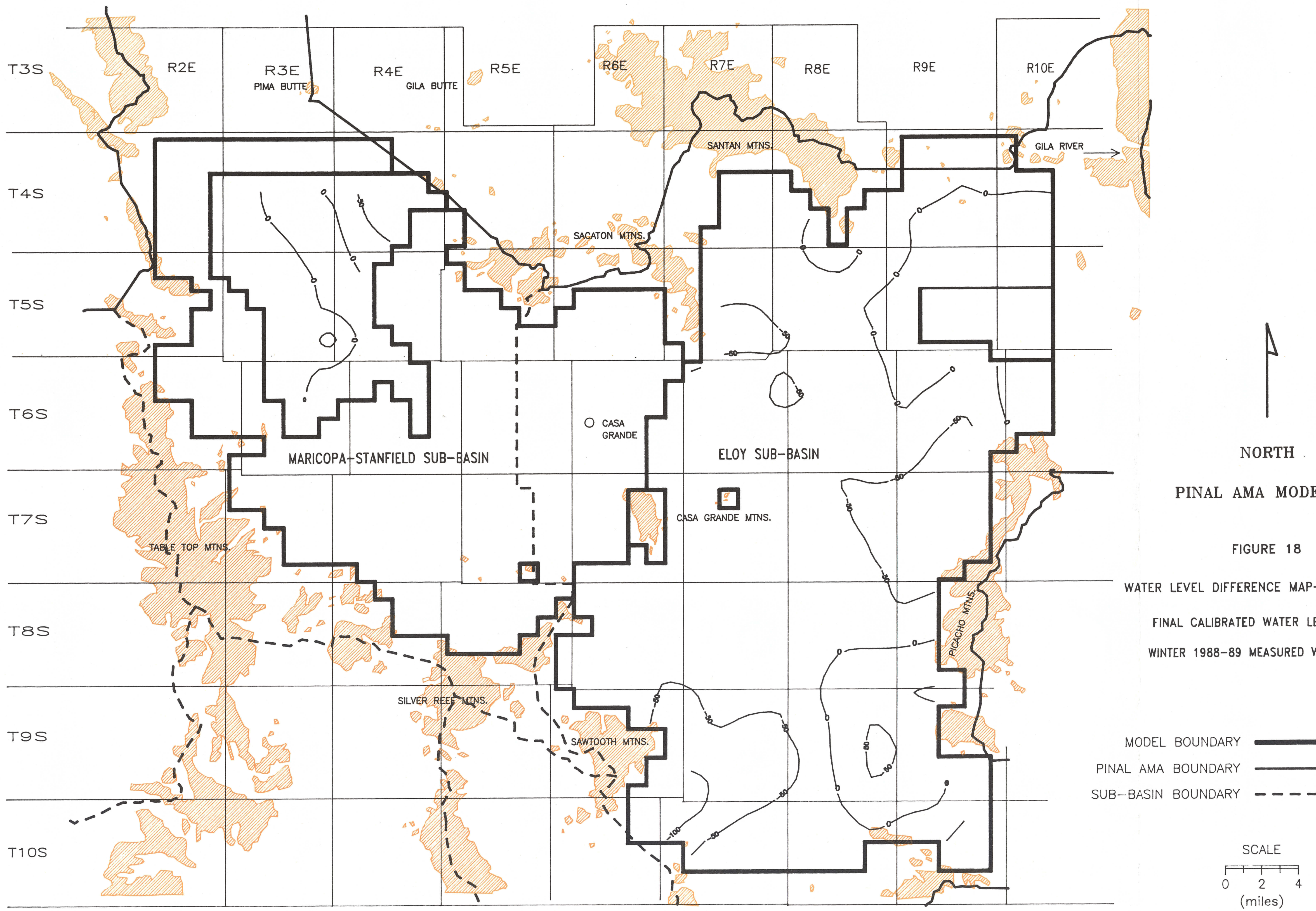
FINAL CALIBRATED WATER LEVELS

ENDING MEASURED WATER LEVELS

SCALE

0 2 4

(miles)



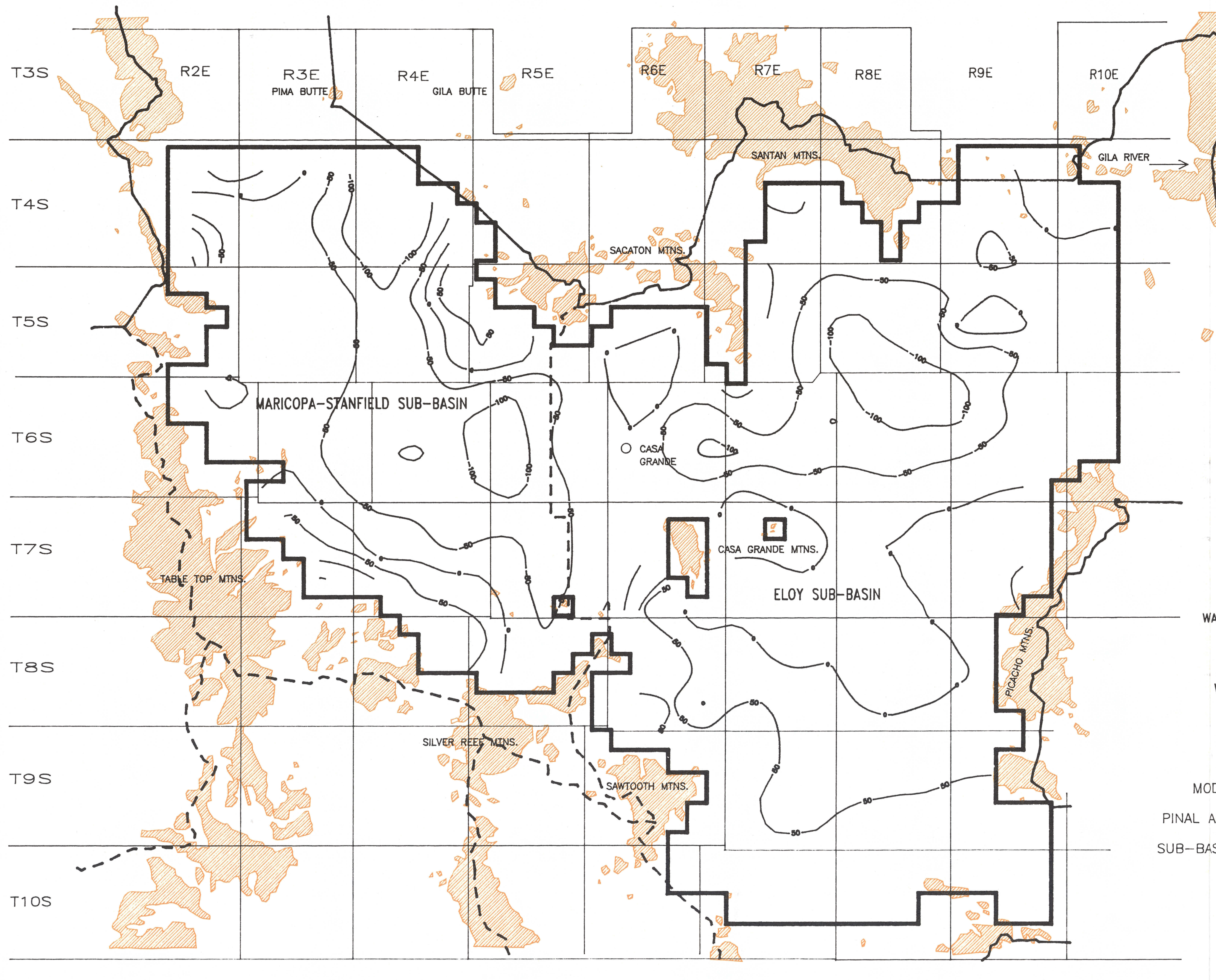
PINAL AMA MODEL AREA

FIGURE 18

WATER LEVEL DIFFERENCE MAP-LAYER 1 (UAU)

FINAL CALIBRATED WATER LEVELS MINUS

WINTER 1988-89 MEASURED WATER LEVELS



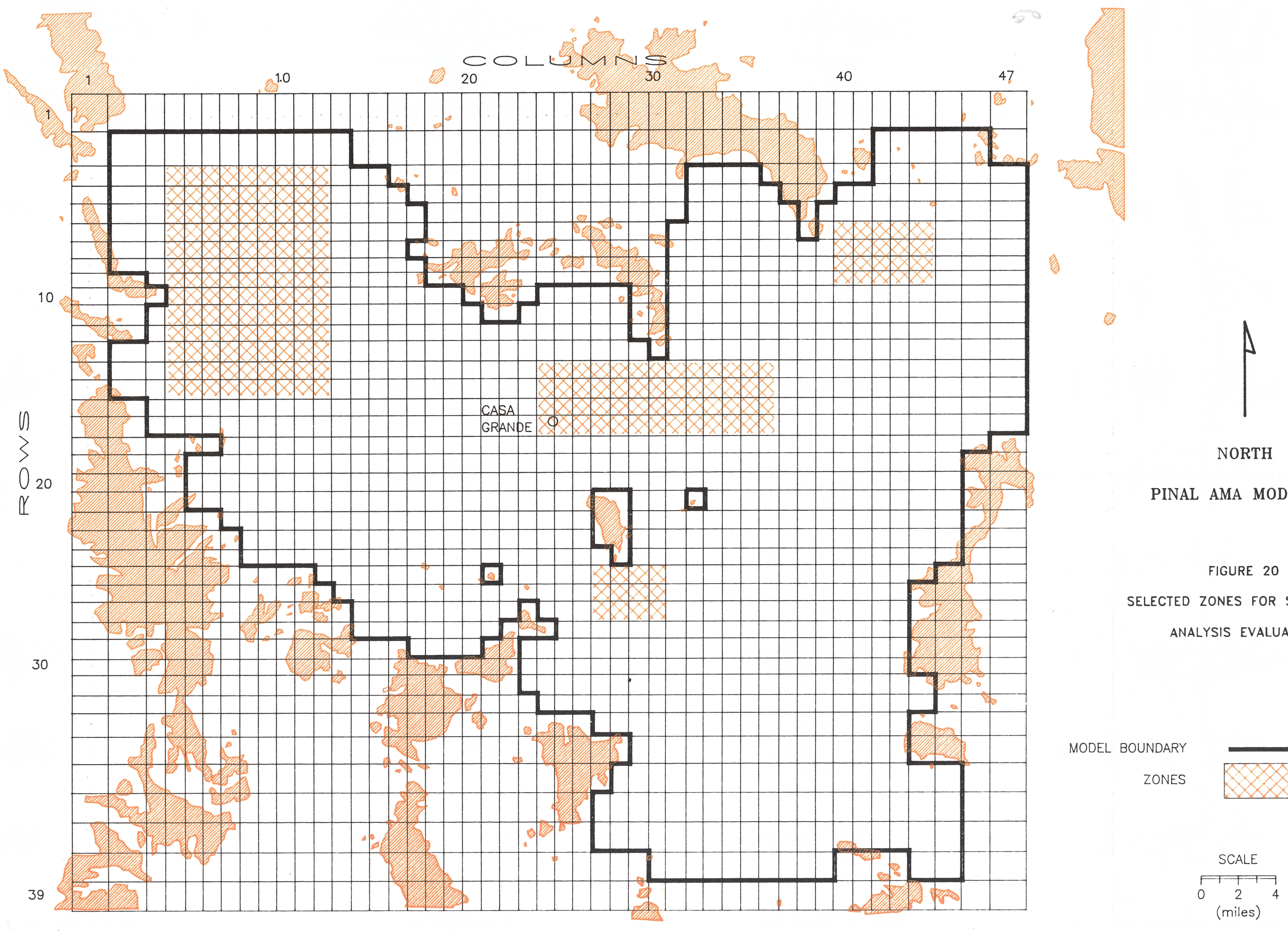
PINAL AMA MODEL AREA

FIGURE 19

WATER LEVEL DIFFERENCE MAP-LAYER 2 (LCU)

FINAL CALIBRATED WATER LEVELS MINUS

WINTER 1988-89 MEASURED WATER LEVELS



PINAL AMA MODEL AREA

FIGURE 20

SELECTED ZONES FOR SENSITIVITY ANALYSIS EVALUATION